Bell Telephone MAGAZINE

SUMMER 1957

Customer Products Planning extends into the realm of dreaming

XUM

VOLUME XXXVI NUMBER TWO SUMMER 1957

Bell Telephone Magazine

A non-technical review, published quarterly to give Bell System management people a broader view of the history, objectives, operations, and achievements of this business than they might attain in the course of their day-to-day occupations, and an added sense of participation in the problems and accomplishments of our nation-wide public service.

Cover: Customer Products Planning – and Dreaming. Painted for this Magazine by *Robert Geissman*

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A MEDIUM OF SUGGESTION and A RECORD OF PROGRESS

JUDSON S. BRADLEY, *Editor* SALVATORE J. TAIBBI, *Art Editor*

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FREDERICK R. KAPPEL, *President* S. WHITNEY LANDON, *Secretary* JOHN J. SCANLON, *Treasurer*

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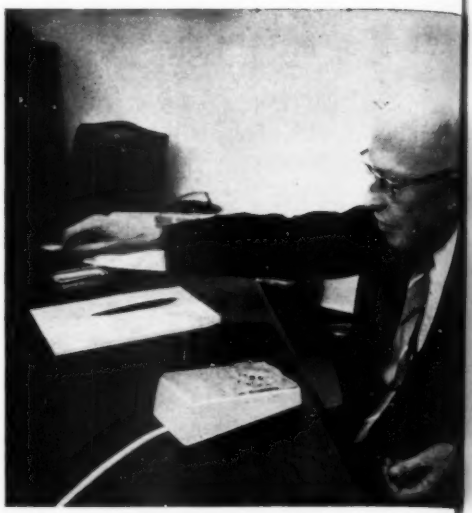
Who's Who & What's What In This Issue

THE FIRST QUARTER-CENTURY OF E. HORNSBY WASSON'S Bell System career was spent with the Southern Bell Telephone and Telegraph Company. Beginning as a salesman in Chattanooga, Tenn., in 1926, he progressed through sales and other Commercial Department responsibilities to become in 1947 general commercial manager in Atlanta. Three years later he moved north to the Northwestern Bell Telephone Company. There he was successively vice president of Public Relations in Omaha and, in 1951, vice president and general manager of the company's Minnesota Area, with headquarters in Minneapolis. Just five years ago he moved to A. T. & T. in New York as vice president, with staff responsibilities, and since March of a year ago he has been Vice President

E. Hornsby Wasson



Harold R. Huntley

– Rates and Revenues. His lucid exposition of the Bell System's financial picture discusses large sums in simple terms.

WHEN HE JOINED the Wisconsin Telephone Company in 1917 as a transmission and protection man, HAROLD R. HUNTLEY entered a field which held his interest for close to forty years. The Wisconsin Company's transmission and protection engineer for ten years, he became transmission engineer there in 1928. In 1930 he joined the A. T. & T. Co., where in the Department of Operation and Engineering he was successively in charge of groups handling inductive coördination matters with power organizations, in charge of electrical coördination generally, in charge of toll transmission; from 1951 to 1956 he was transmission engineer. During 1956 he was

Gale M. Smith

assistant chief engineer until December 1, when he was made director of Customer Products Planning. Readers who remember Mr. Huntley's delightful "DB Rampant on a Field of Azure," published in this MAGAZINE for Winter 1953-54, will recognize his qualifications for an assignment where planning necessarily include imagineering.

GALE SMITH remembers inspecting a solar still which distilled drinking water from ocean water and having its operation explained to him by the inventor, one Alexander Graham Bell. The next Bell he met was Southern Bell, which employed him as a cable splicer's helper in 1939. After two years in the Plant Department in Miami and a year as a supervisor in the office of the general plant supervisor in Atlanta, working on emergency and coastal harbor radio, he moved to New York as a field engineer with the Radio Division of the Western Electric Company. He worked on the preparation of technical information for shipboard and guided missile radars maintained by the Field Engineering Force. Since 1945 he has been with the Radio Section of the Department of Operation and Engineering of the A. T. & T. Company, where he has worked on mobile radio, microwave TV pick-up equipment, and more recently on microwave radio relay systems.

SINCE MAY 1956, FREDERICK C. SMITH has been sales promotion engineer in A. T. & T.'s Department of Operation and Engineering. Starting in the Commercial Department of the New York Telephone Company in 1926, he served in a variety of business office and sales assignments in the Manhattan-Bronx-Westchester Area. A number of these assignments related to servicing the communications needs of

(Continued on page 62)

Frederick C. Smith

Where the Trans Canada line crosses the Cascade Mountains in British Columbia. *See "Trans Canada Telephone System's Anniversary" on page 45.*

Advancement of telephone communications, essential to industry, to defense, to our country's continuing progress, requires a better margin of profit.

GOOD SERVICE DEPENDS ON GOOD EARNINGS

E. HORNSBY WASSON

Vice President, A. T. & T. CO.

WHEN THE 1956 ANNUAL REPORT of the A. T. & T. Company was issued, one reader – who by the way is neither a share owner nor an employee – wrote us an interesting comment.

He noted that last year and in 1955 the Bell System had earned 6.8 per cent on its capital; and he said he had long wondered about the effect of "a consistently low return" on our business. How would it influence our decisions? And what will eventually happen, he asked, if we must be "overburdened with caution" in a society that demands venturesomeness?

He concluded by suggesting that the Bell System must show the public that at least in the long run, higher earnings will benefit the consumer – through better service, lower rates, or both. This proposition, he said, seemed to him entirely sound.

In my own judgment there are several reasons why the System today needs more adequate rates and a better margin of profit. But the main and over-riding reason I believe is the one you have just read – that good earnings will give telephone users the best and biggest value for their money.

Is it important that we bring this about? Who can doubt it? Our service is essential to the progress of the country. We are at work in a teeming, expanding economy. Population is growing, production increasing. Changes in our social and industrial organization come with great speed. The need for more communications – ever-improving communications – and new forms of communications – is evident at every hand. We not only can, we *must* make great contributions to the future. To make them as we should, we need earnings that will generate and sustain great energy and inspire the most progress.

In this article I shall first outline some of the immediate reasons why better earnings are required. Then I should like to discuss further the basic premise that good profits bring the greatest benefit to our customers.

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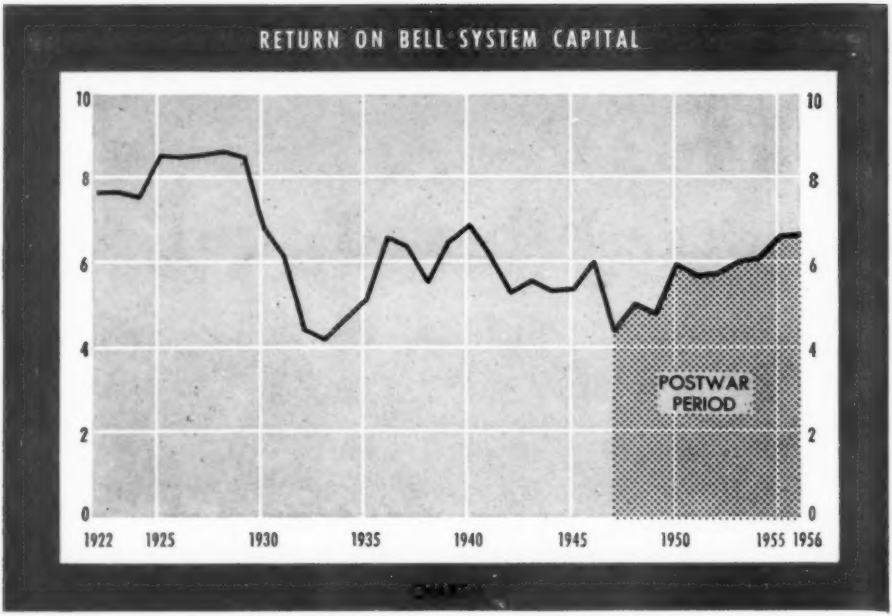

As a beginning, let's look at the record over the past 35 years. Chart 1 shows the return on capital—the rate of earnings on the total capital invested in the business—for each year since 1922.

In the prosperous years of the 1920's, System earnings averaged nearly 8½ per cent on capital. In the 1930's, including the five worst years of depression, earnings averaged just under 5.8 per cent. In the war years they averaged 5½ per cent. In the first five years of the post-war period, they averaged 5.3 per cent. In the last six years they averaged 6.3 per cent, and in 1955 and 1956 they were 6.8 per cent.

So there has been a distinct improvement in the last year or two. It was necessary that there should be. In most of the postwar period—which has been the time of greatest economic expansion and general prosperity in the nation's history—our earnings were at well-nigh depression levels. Now they have come up, but you can see from Chart 1 that they have come up from a very low point.

TODAY it seems to me essential that we continue the improvement already begun. It is squarely up to us as managers of the Bell System to demonstrate to the rate payers and regulators alike that good earnings are the life-blood of the telephone industry.

This is all the more important because our industry is vital to the country's progress. We are not providing buggy-whips or horse-cars. We are providing fast, practically instantaneous communication services, and in our society these become more useful every day.

The very growth of our business shows this. Before the war, about 40 per cent of all households in Bell System territory had telephone service. Now nearly 80 per cent have it. Service in rural areas has vastly increased. Long distance calling has quad-

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rupled since 1940 and conversations over the longer distances have gone up over six times.

The operation of modern industry depends on fast communications and plenty of them. Telephone and teletypewriter services knit together the modern corporation—production lines, warehouses, sales offices, accounting, and all the rest. Dealers order by telephone and sell by telephone. Telephone dials control the flow of oil and gas and the distribution of electric power. Financial markets function by wire. Travelers get reservations by telephone, florists sell flowers, dentists make appointments, and plumbers and roofers and painters get business.

Everybody wants the telephone. People on party lines want individual lines. Families are warming up to the idea of complete telephone service in the home. The public likes direct distance dialing and this will continue to make out-of-town calling even more convenient and attractive. Business is already starting to use Bell System facilities to transmit data between office machines, and new equipment now being developed at Bell Laboratories will make it possible for the machines to "talk" with each other at very high speeds.

Each year, too, the telephone system becomes more important in the nation's defense. Civil and military defense communication networks spread over the land. From outposts in the Arctic and from "Texas towers" at sea, signals travel instantly to centers which coördinate warnings and activate defense weapons. This is not yet complete—but it has begun and it is growing.

There is much more to come. Electronic switching is on the way, with the first experimental central office scheduled for trial in Morris, Illinois, in 1959. In the 1960's, electronic switching will grow rapidly, offering new forms of personal, "tailor-made" service to telephone users. New kinds of transmission systems will make it increasingly practical for people to see as well as talk with each other over any distance. And long before then, the flow of improvements will be making telephone service more useful and convenient in many other ways.

So it goes—or, I should say, goes *forward*. All our experience shows that improvement of service brings increasing demand and use. As a striking example, look at the transatlantic telephone cable. Within a few months of its going into operation, conversations between this country and Great Britain about doubled. As one result, a second cable under the Atlantic to Europe is already being planned.

In addition to the increasing usage that comes with improvement of service, we can never forget the growth of this country. It is growing and growing fast—some three million people a year. As. Mr. Kappel remarked at the Annual Meeting of A. T. & T. share owners in April, it's as if we had a new city the size of Tulsa, Oklahoma, or Worcester, Massachusetts, every month.

So this is my first point: With an essential, ever-improving, more versatile and convenient service, in a fast-growing country, we have a tremendously important job to do—and do well.

How do we go about it? With men (and women, of course!)—with materials—and with money. A great deal of money.

In 1957, for example, we expect to invest about $1,600,000,000 of new capital in new plant—more than General Motors, Standard Oil of New Jersey, United States Steel, and DuPont combined. We are having to obtain money from investors at an unprecedented rate, and to do our job as it

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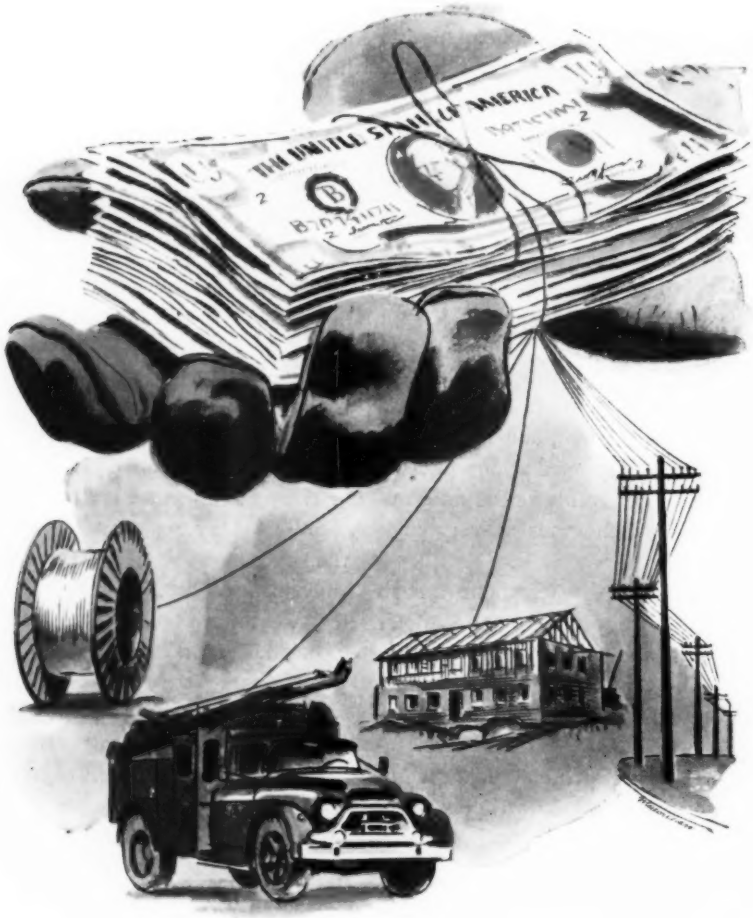
should be done we must continue this in the years ahead. *Because our services are so needed and wanted,* we must carry out new financing on a larger scale than any business has ever before attempted.

So we need huge sums to build needed plant to provide needed service. But this in itself is no reason for investors to provide the money. The person with savings to invest is a free agent. He can do what he likes with his cash—put it in the savings bank, buy real estate, buy Government bonds, buy annuities, buy stocks that he hopes will go up, and so on. Before he entrusts any of his savings to us, he will have to decide of his own free will that this is what he would rather do with those dollars than anything else. In short, we must compete with all other industry—I repeat, *all* industry—to attract from investors the money we need.

Through the years, we have been very



We need huge sums from investors to build the plant to provide service

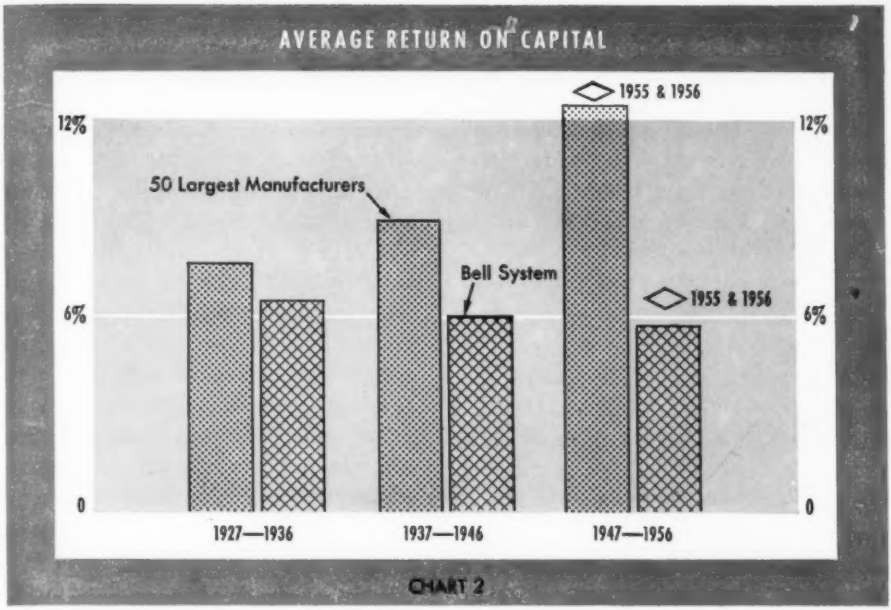


CHART 2

successful in this. We have built up great confidence in the minds of many people. We have paid good dividends regularly for many, many years, through thick and thin. In addition, share owners have received rights to invest further in the business on favorable terms. People trust us. We have a good name and reputation. In consequence, investors have so far put into our business some $15 billion of their savings.

But now let's look at some of the conditions that exist today in this competition for investors' savings.

Chart 2 compares the Bell System's earnings on capital with the earnings of the 50 largest manufacturers in the country. The comparisons show how our earnings match up with theirs by ten-year periods over the past 30 years.

The point is not that in each period their rate of earnings is higher than ours. Our business is somewhat more stable (though our risks are increasing, as I shall bring out later.) We wouldn't expect to earn quite as much as non-regulated manufacturing corporations.

The point is rather in the *increasing difference* between their rate of earnings and ours. The disparity has become tremendous in the post-war period. Their earnings reflect the prosperity of the times. Ours do not. Yet today we must raise more new capital than ever before, and compete with these prosperous companies, among others, to get it!

The "diamonds" above the 1947-1956 bars show the returns for the two-year period 1955-56, when Bell System earnings, as mentioned earlier, improved to 6.8 per cent. Here our performance relative to the manufacturing companies is somewhat better. But the disparity is still far too great. How shall we have reasonable assurance that we can go on raising new capital in unprecedented amounts,

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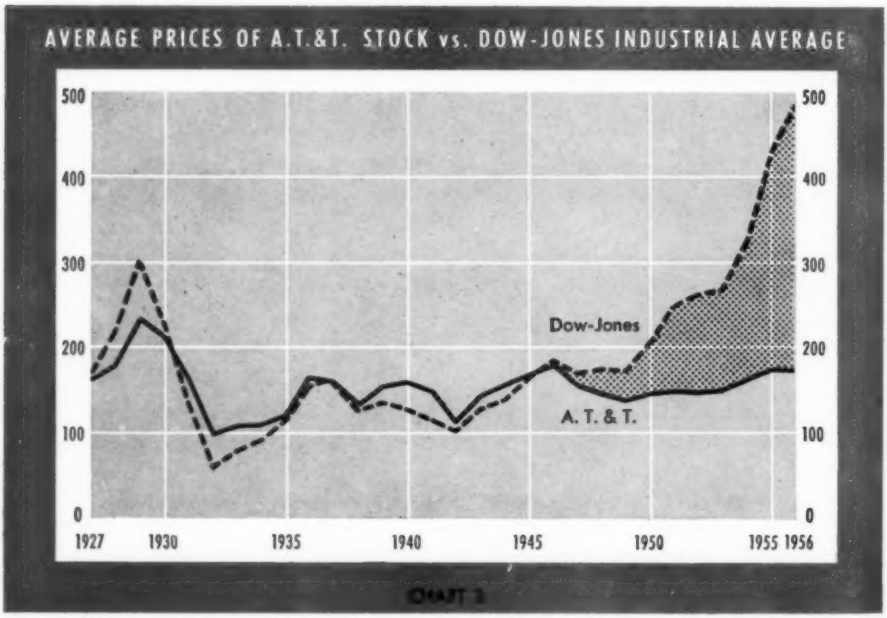
unless we can show better comparative results? We are under public regulation because we do not have competition to the same degree that these other industries have it. But in attracting investors' savings, the competition is wide open; there is nothing that saves us from the necessity of going out into the market place to compete with everyone else.

Nor can we doubt that investors are well aware of the wide gap between our earnings and the earnings of others. They can see it reflected, for instance, in such a chart as the one I have numbered Chart 3. This compares the market price of A. T. & T. stock over the past 30 years with the Dow-Jones Industrial average. For a long time, the two curves approximately paralleled each other. In the post-war period, however, the picture is quite different. And many of our share owners have been asking, "When do we have a more reasonable part in national prosperity?"

This feeling has been increasingly expressed to us in recent years. One way of expressing it is in the question, "Why doesn't A. T. & T. split its stock?" In fact, when a proposal to do this was presented at the 1957 Annual Meeting of A. T. & T. share owners, quite a few people frankly said they hoped it would lead to an increased dividend. The Board of Directors recommended against the proposal, and made clear that a stock split would not increase the Company's assets or the amount of earnings available for dividends. Accordingly, the share owners defeated the proposal. The fact remains, however, that underlying most suggestions for splitting the stock there is a strong sentiment for a higher return.

Summing up what I have said so far, it seems to me we have this kind of picture:

A job to do of great and growing importance—



Among share owners there is a strong sentiment for a higher return

Earnings that have only recently begun to move up from an extremely low level—

A much greater need for capital than any business has ever had before—

Stiff competition for capital from other industries that earn at a much higher rate than we do—

A strong current of feeling among share owners who tell us that this business is not participating in the general prosperity as it should.

Three other points should be added here. I'll be brief but they are all important.

First, as everyone knows, money is tight and interest rates are up. It costs much more to raise debt capital than it did two or three years ago. In fact, interest costs on Bell System bonds sold in the Spring and Summer of 1957 were substantially higher than at any time since 1930.

Second, Bell System operating costs continue to increase, mostly because of rising wages. Part of the rate increases the companies are asking for is needed just to keep earnings from slipping back below the current level. This makes it all the more important that action on rate requests be as prompt as the commissions in their good judgment can make it. Often in the past, when a commission proceeding has taken a long time, rises in costs after the proceeding began have made the rate increase insufficient when finally granted. In such a case, earnings never do catch up with the needs of the business. Today, under the circumstances I have already outlined, it is particularly important to reach sound decisions promptly.

Third, it is clear today that telephone users want many optional features of serv-

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ice. As a progressive business, we certainly wish to provide these, and we would not be up to our job if we failed to do so. But as we provide them, we are making additional investment that carries a greater risk. In a pinch, our customers would much more readily discontinue these services than, for example, their basic telephone service. The truth is that these optional features are pretty much competitive with the products and services of other industry —with electric appliances or tulip bulbs or aluminum screens or whatever else the customer chooses to spend his money on. In providing them, we take our competitive chances and we should be allowed to earn accordingly. Remember that regulation is a *substitute* for competition. Where competition exists, and to the extent that it exists, the pure logic of the matter is that the competition itself should determine prices and earnings. If, instead of this, we are limited by regulation to earnings on *total* investment that do not compensate for greater risk in *part* of the investment, then we shall be in the very difficult position of not being able to give the public what it manifestly wants.

Optional telephone services must compete with the products and services of other industries, and our business risk is increasing

That whole paragraph boils down to this: The degree of risk in our business is increasing. Our ability to continue to meet all of the public's expectations depends on the commissions giving full recognition to this.

NOW LET ME REPEAT the main thought that was stated on the first page. How shall we show *that in the long run, better earnings will benefit the consumer?*

The introduction of improvements which carry more risk is of course one illustration. Good earnings encourage this, meager earnings do not. And we ought to bear in mind that people in this country are looking more and more for better things. Less and less do they want the minimum bare-bones product—the cheapest package or the skeleton service at the very lowest price. Increasingly they want the coat with the quality lining, the waterproof wrist watch, the car with the white sidewall tires. If you have any doubt about this, I checked the other day and learned that last year the tire makers turned out about 35 million white sidewalls—and at a good profit, you may be sure.

How shall *we* respond to people's wishes? With boldness and imagination? Or shall we be "overburdened with caution," as my letter-writing friend expressed it? This will pretty much depend on how well we earn. In fact, our financial results will profoundly affect not only the kind of thing I've just been talking about, but every aspect of our service to the public.

The great thing about good earnings in any business is that they improve your opportunity to use good judgment and act on it. Skimpy earnings make it necessary to cut your cloth to the needs of the moment. This may often mean having to do the thing that is expensive in the long run.

Let's consider a few examples.

We know that over and over again in our business, we must make intelligent decisions in building our plant. We know that over a period of years, it is not economical to underbuild – to put in plant piecemeal. Building just what is needed at the moment, then putting in additions soon after, is expensive. The dollar outlay may be held down today, but in the end the unit costs go up. Engineering work must be repeated. If a building must be added to, the addition costs more per cubic foot. Two small cables cost more than one that is twice the size. The crews go out twice instead of once. All along the line, piecemeal building costs more.

But to build economically costs more at the start. It *requires* that the company be in A-1 shape financially—that it can readily get all the capital needed—and that it can afford to carry the larger initial investment.

We know, too, that an ounce of prevention is worth a pound of cure. Shall we spend money for preventive maintenance? Shall we shut off troubles before they happen? Or shall we let the future take care of itself (because we have to be cautious about current expense) and then later find ourselves spending ten times as much to fix up things that went bad?

We have certain ways of going about our work – certain methods and procedures. Shall we say (because we are cautious about expenses) that these methods will have to suffice? Or shall we spend money now to pay able people to work to improve them—so that in the long run our procedures will be more and more economical?

Training people costs money. If earnings are low, and we have to strain to make as good a financial showing this year as we can, shall we be overly cautious about how much we spend to train

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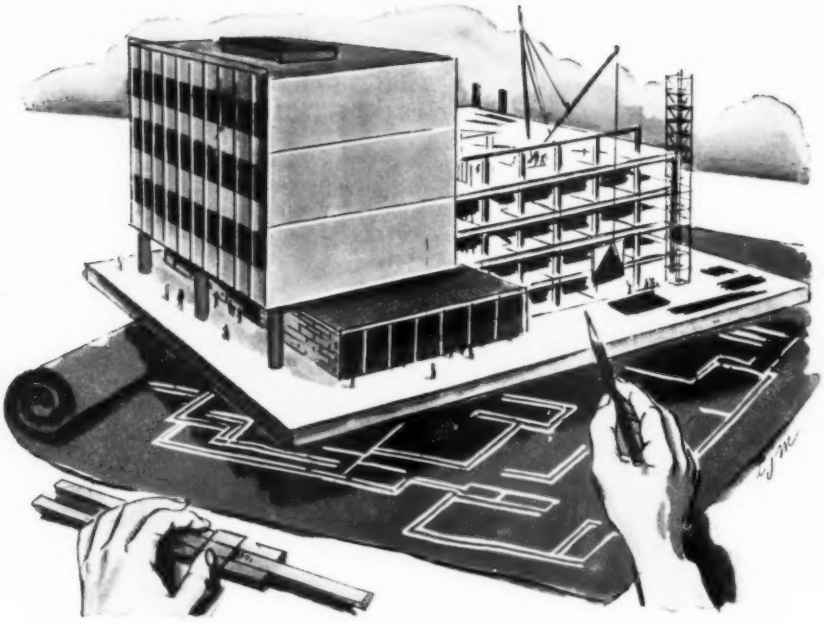

Piecemeal construction . . . having to build for the moment's need and then putting in additions soon after . . . is uneconomical in the long run

employees in their jobs? Who would say yes to that?

These are not theoretical questions. These are practical realities that we must deal with every day. Telephone people know them for such. *Only* good earnings give the freedom to do what ought to be done in the consumer's interest—the well thought out, imaginative, look-ahead job. The economical job. The right job.

Now I THINK I can hear a friendly comment on what I have written. Perhaps it goes something like this:

"All very well—but isn't it true that the Bell System has done a pretty effective job in these post-war years? You *have* succeeded in raising billions of dollars of new capital. You *have* generally met the greatest demand for telephone service in history. You *have* carried on research, modernized equipment, and improved the service so that it is better today than it ever was before. And you have done all these things on what you have actually earned. Why, then, is it desirable that the level of earnings be raised?"

I would say in reply:

First, it is beyond dispute that we have made good progress.

Second, I am convinced this progress would have come faster, and gone farther, if earnings had been better.

Third, this same comment that I have put in quotation marks might just as easily have been made a few years ago, when our earnings were even lower than they are today. But as sure as I am using this

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pencil, if we had not then pressed on the commissions our need for better earnings, and they had not acted, the comment could never be made today.

Fourth, we have consistently acted on the *faith* that our need for improved earnings would be recognized; and our long-term earnings performance, going back to the prosperity of many years ago, has had a profound influence in persuading our share owners, now 1½ million strong, to maintain their faith in us. But the prosperity of the past goes farther back into history each year. We greatly need an equal share in the prosperity of *today* to make sure that we can keep the faith of investors through the years ahead.

Fifth, as I have mentioned, there is more expressed sentiment today on the part of A. T. & T. share owners that they deserve an increased return than was ever voiced in the past.

Sixth, as I have also mentioned, we must obtain more new capital today than ever before, and to get it we must successfully compete with other companies which today earn far more than we do.

Seventh, the over-all rate of earnings of the Bell System is the composite of many different rates of earnings in the various states. In some of these the earnings are still woefully low—so low as to virtually block progress.

Finally, the type of comment I have quoted seems to me to come out of the habit of thinking in the past. How much imagination is there in it? Is there any at all? I deeply believe that with better earn-

Action by regulatory commissions has been essential to our progress

ings we can bring about far more in the way of better service than is dreamed of in this philosophy.

What we in this business do, and the way we do it, is vital to the country's economy and to its progress. Our financial good health directly affects the well-being of millions: 1,500,000 share owners, nearly 800,000 employees, tens of thousands of other businesses that supply materials and services to us, their employees, every community where we pay taxes and telephone people spend wages. But above all, it is our *service* that counts, and will count even more in the years ahead. Our job helps every other job. And the better our job, the more we can help the progress of others and the progress of the nation. Conversely, for ours to become a *problem industry* is unthinkable.

I know telephone people take pride, and rightly, in what they have already accomplished. But our service is still far from perfect. We can make it much better. We can surely do much, much more for everyone we serve than we are able to do today. *This* is the reason—and it is the only possible sound reason—for seeking telephone rates that will afford a better margin of profit. As we lay our needs before the various commissions, in the final analysis we are asking them to act on their faith in us—in our competence, our energy, and our sense of public responsibility. I am confident that Bell System management and all the men and women of the System will meet their obligations and justify the faith.

O. & E.'s newest division seeks to offer customers a wide choice of new equipment and services, to show how progressive and sound this business is

CUSTOMER PRODUCTS PLANNING —WHAT AND WHY AND HOW

HAROLD R. HUNTLEY

Director, CUSTOMER PRODUCTS PLANNING, DEPARTMENT OF OPERATION AND ENGINEERING, A. T. & T. CO.

UNLESS SOMETHING HAS HAPPENED while I wasn't looking, we (i.e., the Customer Products Planning Division) are the youngest division in the O. & E. Department of the A. T. & T. Co. We have been in existence only about six months. We have had much to learn and have had to spend much of our time during this period in getting organized and pulling loose ends together, but we have made some progress. I want to present a sort of status report and give you a bit of the atmosphere which will guide our thinking and planning for at least the next few months.

We were set up to promote a single objective: that of "providing our customers a wider choice of attractive instrumentalities and services," packaged and priced in such a way that customers will increasingly think of the telephone company as a very progressive outfit and one that earns the right to be financially sound.

In order to work toward an objective as broad as that, we had to set up some principles to guide us. And these are the principles we have adopted – and why:

1. *A business must innovate constantly.* Too many businesses have discovered – sometimes too late – that their services or products, which they thought were indispensable, suddenly ceased to be so, because somebody else came along with something people liked better – or just because people changed their minds. And just any old innovation won't do; the innovation must be along lines that will make people want the product at a price which will be financially attractive to the business. But –

2. *We don't know what people want.* People are fickle and unpredictable in their

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Note: This article and the one by Frederick C. Smith (p. 32) deal with two closely interrelated aspects of the over-all job of fitting Bell System communications service to the ever broadening and ever changing requirements of customers. The Industry Studies work discussed by Mr. Smith is a prolific source of ideas for the work discussed by Mr. Huntley and, in turn, provides an important field for testing the value of new instrumentalities and services to industrial and commercial customers. EDITOR.

wants; there is no use trying to outguess them; because –

3. *People themselves don't know what they will want.* People don't know whether they want something until they can see or feel or smell or wear or use it; and perhaps even then all they can tell us is that they want something different. And –

4. *Different people want different things.* If it were not so, all houses would be alike, there would be only one size and style of automobile, the world would be a dreary place indeed. And –

5. *Anything which enough people really want will be produced by somebody sooner or later.* We have unbounded faith in what the human mind can produce; our only problem is to be sure that we find out what people want and then use the infinite capacity of human minds to produce it.

These principles are the basis for all of our planning. They may sound nebulous, but in fact they form a very sound and easy-to-work-with basis. All we have to do is cook up ideas of what customers *might* want, try them out in the market place at prices which would make them profitable for us to sell, and let people tell us whether or not they *do* want them.

And while we can't *push* people into liking the brews we thus cook up, we can lead them into liking us and our products by demonstrating that we are willing and able to produce things for them that are even better than they thought we could do. We believe fervently that markets can

Clinic: Will these telephones "provide our customers with a wider choice of attractive instrumentalities and services"?

be created, and that the way to create them is to innovate and lead, and this is what we intend to do.

How we go about it

Now, while the division is charged primarily with planning, it is also charged with getting its plans implemented. It must see to it that things are produced for people to see and feel and use, so that they can tell us whether they like them (or what else they would like better); and then it must see that those things which people want are produced in the right quantities at the right time. Thus its planning also includes a great deal of "doing." But it does not do all the doing itself. Some things it does itself; some things it gets others to do; some things it gets done by both processes.

Thus a substantial part of the work of the Division is done in close coöperation with the work of many other Divisions and Departments of the American Telephone and Telegraph Company, the Bell Telephone Laboratories, the Western Electric Company and the operating companies. In these relations it might be looked upon as performing roughly the same kind of function as a catalyst does in a chemical process; that is, the function of getting things done which might otherwise not get done at all, or would proceed too slowly.

And speed is of the essence if we are, in fact, to innovate and lead and to hold up our end in the forward-looking and progressive over-all program of the Bell System. And how shall we move fast and still keep the risk small?

There are many factors, but one of the most important ones is the "model shop" concept which Western Electric has set up. Basically, what this does is to provide private production facilities devoted *exclusively* to turning out things which the Division needs in order to find out what things customers will like.

There will be an actual model shop, consisting of a small factory within a big one – the Shadeland plant of the W. E. Co. at Indianapolis – manned by its own core of craftsmen and engineers and having access to and working very closely with the branch of the Bell Laboratories at Shadeland. But the concept is broader than this; for actually any or all of the factories of Western Electric and the Teletype Corp. (and, where appropriate, outside organizations), are available for production of things the Division needs.

This arrangement not only undertakes to make anything the Division needs for testing in the market place, in the numbers and at the time it needs them, but it undertakes to make them from the sketchiest kind of information – rough sketches, crude models, and the like. And the Laboratories have set themselves up to work very closely with this set-up and in the same kind of atmosphere.

This concept is a very potent method to permit fast and effective testing in the market place: it is, in fact, the heart of the whole operation. With it, progress is limited only by our ability to innovate. Without it, we would simply be fanning the air.

Now, while we are innovating, we must always remember the definition of our business which Theodore N. Vail gave over 50 years ago: "Our business is service." So, we must always be sure that whatever we produce will work – and work well. We must never degrade service for the sake of appearance or convenience or anything else; rather, we must always use appearance and convenience to improve the quality of our service.

The petite "bedroom set," so called, is probably the best known of the experimental models.

Wedding science and wants

THIS WE CAN ACCOMPLISH only by wedding science and wants. It has been said that "necessity is the mother of invention." And I like to think of science as the father, and of the services and instrumentalities as the offspring of the mating. Our job is to ensure that what people want and what science says is possible are wedded in the best possible way.

In actual practice, the wedding process works about as follows:

The Bell Laboratories are continually working on scientific things, and they and we together are continually working on practical applications of these advances in science.

From many parts of the operating companies, from outside sources, from the Laboratories and ourselves – from any and all sources – come ideas as to what people might want.

All of this is synthesized into a series of projects. Some projects may arise primarily from advances in science; some from ideas as to what people might want; some from a combination of the two.

These projects are divided into three classes, and the Laboratories and we work on each class in a different way.

1. Some projects are so definitely going to result in better service or involve such basic scientific advances that there is no need to put them in the model shop; they proceed along the normal path through research, fundamental development, and development for production.

2. Some projects are purely of the "model shop" variety; i.e., we know how to make them – at least well enough for testing in the market place – and what we have to find out is whether they will, in fact, be "attractive."

3. Some projects involve fundamental scientific advances, but parts of them may be segregated and "model shopped," to find out what features people will want.

If a product of the model shop successfully runs the gauntlet of testing in the market place, it then goes back into the main stream of development and the design is refined for regular production.

We can divide the whole field in which this process operates into two parts: telephones, and everything else.

Telephones

A VERY LARGE PART of the business of the Bell System is telephony. For this reason, telephones and the wiring and other gear associated with them on customers prem-

How about a hand set with self-contained dial?

ises get a lot of attention in the Division.

Everybody knows what a telephone is, and has ideas about it. What we are trying to do is to synthesize these ideas into broad concepts and work out answers to the questions they raise.

For example, should the dial and the ringer and the other functions of the telephone continue to be in one box with a handset tied on, or would some other arrangement be better? The bedroom set is about as small as we can make a one-box design. But is this the way people want it, or would they rather have the dial on the handset, and maybe ringers somewhere else, and thus permit even more freedom in choice of forms and arrangements?

Another question which must be answered is whether people basically would

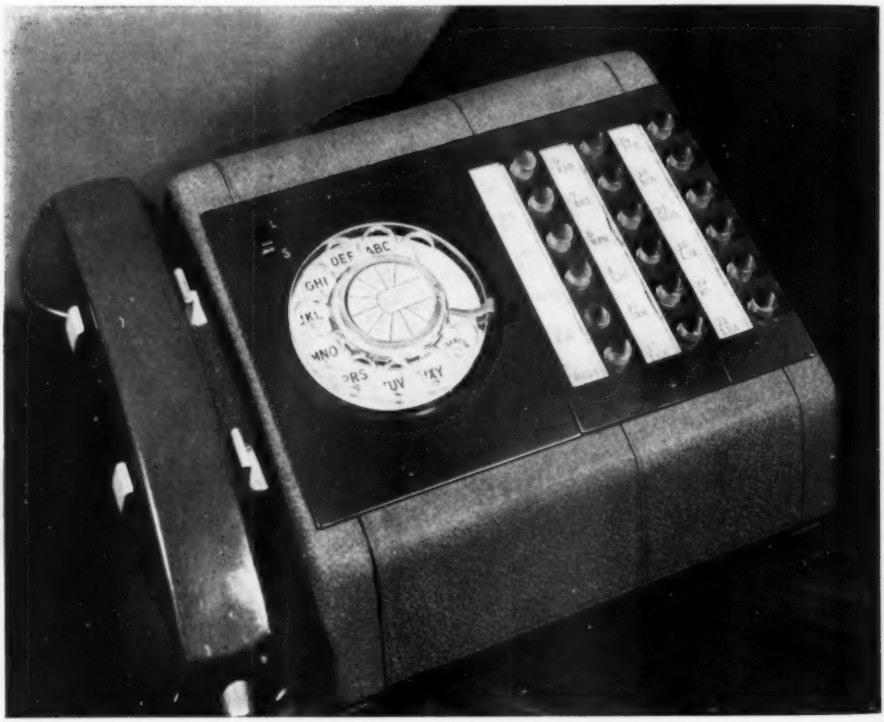
like to talk without holding anything in their hands, with the handset (or something equivalent) relegated to a subsidiary position, or would they like to continue to use the handset as the primary method? And it is very important that we find out which method people want, because the answer will critically affect the whole future of telephone development.

For both hands-free and handset types of telephones, we know (or at least we think we know) that people would like different styles, sizes, and arrangements for different rooms in a house, or in different offices, or in different other locations. And there are basically two ways to go about providing the wide range of instrumentalities this would call for:

1. Develop a much wider range of telephones of different designs.

2. Develop a line of basic "building blocks" which can be assembled in numerous forms and arrangements and a method of providing attractive "covers" for these different arrangements.

The first method would obviously result in a great proliferation of basic types, and would result in very complex manufacturing, distribution, stocking, and inventory problems, which actually might bog us down. So, while it will require a great deal more ingenuity, we have elected to follow the second road, and we and the Laboratories are now scratching our heads to come up with ideas on the building



A modular console with 18 push-buttons

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An application of the "building block" concept: a desk drawer installation

blocks we will need, how we can put them together, and how we can produce a line of "covers" which will be attractive and easy to apply.

And, this greater-used and wider variety of telephones in homes and businesses brings with it new requirements for signaling and switching on customers' premises. In this field, again we are working along the lines of providing basic building blocks and packages which can be put together in a wide variety of manners to meet a wide variety of customers' wishes.

With all of this, we must learn how we can do a better job of wiring houses and offices and other places so as to provide greater capacity for growth and more flexibility for changes. This job is so complex and important that we have set up a separate "project" to deal with it. This work has many phases; it not only encompasses cabling and jack-and-plug arrangements to facilitate installation and subsequent changes, but also affects and is affected by such things as how much of the customer switching should be done at the keys in key telephones and how much in out-of-sight cabinets; what is the best method of "packaging" of customer switching arrangements; and many other things.

Other fields

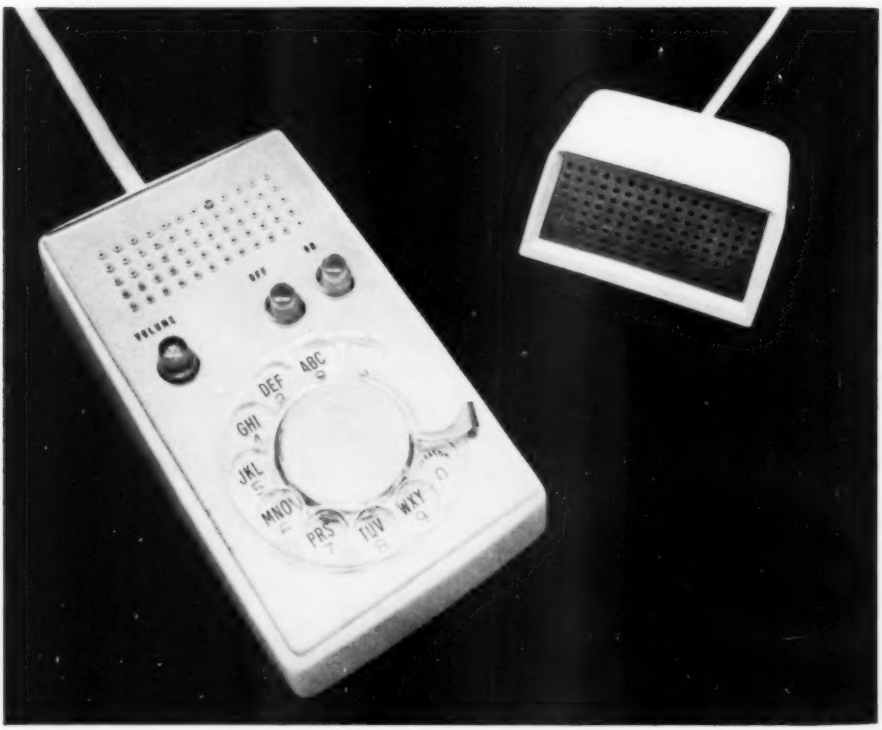
UP TO COMPARATIVELY RECENT TIMES, communication has been almost exclusively

between human beings. By that, I mean that before anything could happen as the result of a communication, some human being had to hear or see it, and then he had to interpret it and take some intelligent action – if any was called for.

And I expect that, for many years in the future, the large bulk of communications will be between human beings. A great deal of it has significance only from the social standpoint; e.g., calls for fun, or to make a date, or for many other reasons. And even in business, many communications are of a nature that require the judgment and imagination that only humans can supply, before any action can ensue.

The telephone has been and probably will continue to be the mainstay for such communications, although TWX, private line teletypewriter systems, and many other forms of communication are assuming increasing importance. But even these other forms are primarily directly between – or at least directly for – people; even the very extensive radio and television program networks which exist are for this purpose.

But the vast growth in business and industry, and the vast strides which are being made in diversification and decentralization, are bringing with them many new problems of coördinating the activities of the (often) far-flung parts, and of getting all of the facts which are needed to the proper points at the right time. The paper work is growing by leaps and bounds



A hands-free dial and microphone unit with associated speaker—a concept originated by Michigan Bell

XUM

and the great difficulty of digging the particular facts needed out of the innumerable documents which are involved is forcing a very rapid increase in the use of business machines and computers which can do routine work and digest great masses of data at amazing speed.

But the use of machines is only half the battle – and it is the other half that involves electrical communication. Much of the advantage of high-speed machines is lost unless the data they work on can be brought to them and the digested results can be got to the people who need them also at high speed. The most effective way to move information at high speed is electrically. And this requires channels over which machines can communicate with other machines in their own "machine" languages without the intervention of any human intelligence.

In this atmosphere, it is not surprising that the Division is doing a lot of work on this general subject. We are, of course, old hands at providing channels for many of the simpler forms of machine-to-machine communication – like centralized metering, and control of switches or valves on far-flung systems – but this new field has many more unknowns. It is in the growing-pain stage right now, and there are almost as many different predictions as to what it will look like when it reaches maturity as there are people who predict.

Therefore, we are falling back to our basic principles – and using the model shop concept to full advantage. We are getting devices built which we hope will be useful first steps in providing improved methods of connecting machines together – as well as providing better communication between humans – and will at least tell us whether we are on the right track, or what other track we should be on.

But we are not stopping here. There are many other new uses of Bell System facilities. Some of them are new applications of existing arts, or modifications of them, to new circumstances; for example, high-speed facsimile, and the use of television in business, industry, and education. And some of them are even more visionary. But they are all grist to our mill.

Finding out what people like

IT DOES US NO GOOD to innovate and move fast through the model shop if we don't have an equally effective method of finding out whether people want what we produce. This we can only do in the market place.

But even the market place will not give us the answers we need unless we plan the tests carefully and analyze the results properly and dispassionately. The planning and carrying out of the tests involves many people in a number of Divisions and Departments here at 195 Broadway in New York and in the operating companies – Commercial, Statistical, Plant, Merchandising, to name only a few – and many more are interested in the results. Because on the results rest important decisions: to go ahead, or not to go ahead; what rates and pricing methods to use for maximum customer satisfaction and profitability; what changes should Bell Laboratories incorporate in the final design; what production rate should W. E. Co. plan on – and many others.

And the methods which are used to test the product in the market place must themselves be tested. As far as I can find, nobody has a sure-fire method of extrapolating from a sample what the reaction of people will be to full scale marketing of a product. But we believe that we can

greatly lessen the margin of error, as compared to not testing at all, even at the start, and that if we keep our minds open and subject our methods to as critical an analysis as we do our products, we can develop techniques which eventually, at least, will really lead us down the path people want us to follow.

Where do ideas come from?

As I SAID BEFORE, in order to "innovate" and get things made and test them in the market places, we must have ideas. And ideas come from people: all kinds of people in all parts of the business and outside the business.

One of the most heartening aspects of a job like that the Division is doing is to discover the wealth of imagination and ingenuity that people have. I suppose it is basically the same thing which makes them want new and better things in the first place.

I am not one who holds with the current clamor that there is a dearth of ability to run the increasingly complicated business and industrial complex that we call the American system. Rather, I think I can bear witness that the problem is to find ways to *release* it. And our credo is that *if* we can find better ways to release this inherent ability of people, our path will be smooth.

Our greatest problem is to find ways further to release this ability – and to develop smooth roads over which ideas can travel to and fro, and much better methods of handling and implementing them. Let me reiterate Mr. Romnes' plea, voiced in this MAGAZINE for Winter 1956-57, that Bell System people everywhere take a personal interest in making service and instrumentalities more pleasing and useful to our customers and that you tell us about it. And let us beg your indulgence if we fail to live up to your expectations of what we do with your ideas, at least while we are learning.

Where do we go from here?

WE ARE A YOUNG (and perhaps brash) Division, with little in the way of experience or tradition – in our own business or any other one – that we can tie to. I am not presumptuous enough to predict our future or what we will accomplish as a Division.

But I am certain that we are working on the basis of the right *principles*, and that as long as we keep our eyes on them, and our minds open, we cannot help but contribute to progress.

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Not only automation but commutation may be affected by further development of communications facilities which will enhance the home as life's focal point

A LOOK AT THE FUTURE

GALE M. SMITH

RADIO SECTION, DEPARTMENT OF OPERATION AND ENGINEERING, A. T. & T. CO.

This imaginative article first appeared in "Radio Notes," an informal summary of activities which is circulated among System people concerned in various aspects of radio. We are happy to reprint it—with a few modifications of terminology—as of potential interest to a much broader readership. EDITOR

IMPROVED COMMUNICATION and transportation facilities contributed much to the rapid transformation of our society from an agricultural to an industrial basis. By a sort of circular process, the more refined techniques of an industrial age are now making available to us new transportation and communication tools with which our society can further transform itself. No one can foretell the precise shape of things to come, but the outline of certain possibilities can be dimly discerned.

We are becoming daily more aware of how easy it is to move materials from place to place by means of the newest transportation and materials-handling techniques, such as conveyors, fork-lifts, palletized loading, truc-train, and such devices. We are still too much inclined, however, to ignore the versatility of modern communication facilities and, therefore, to be convinced of the necessity for endlessly transporting human beings over the face of our land, like so much merchandise, by plane, train and automobile.

For example, if half a dozen business men in different parts of the country wish to confer, they take it for granted that they must spend more man-hours on transportation to a common location than they will in actually communicating with each other, although it has been technically feasible for some time to employ closed-circuit TV for such meetings. In the not too distant future, when closed-circuit TV is economically more attractive, we may expect video conferences to become an accepted part of business practice.

Just imagine the effect a trend of this nature will have on the demand for intercity video channels.

The number of business men who travel long distances to conferences is a very small percentage of those who commute daily. In any large city, many thousands of people spend two or three man-hours

each day in being transported from their surburban homes to their places of business. In their high-rent offices they spend their days conversing with other business people over the telephone, reading incoming correspondence, and dictating outgoing letters. It requires no great feat of the imagination to foresee the business man of the future sitting at his desk in his own home, doing his business over the telephone, dictating his letters over the phone, getting them back by facsimile or Teletype, and holding his conferences or inspecting merchandise over closed-circuit TV. He will save the time, expense, and wear and tear of commuting and he will save office rent. He can sleep an hour later in the morning, have lunch with his family, and enjoy an extra hour in his garden or his workshop at the end of the business day.

Try to visualize the changes in telephone plant which would be required if a large number of homes were to have business phones or off-premises extensions and Teletype or facsimile machines in addition to residence phones.

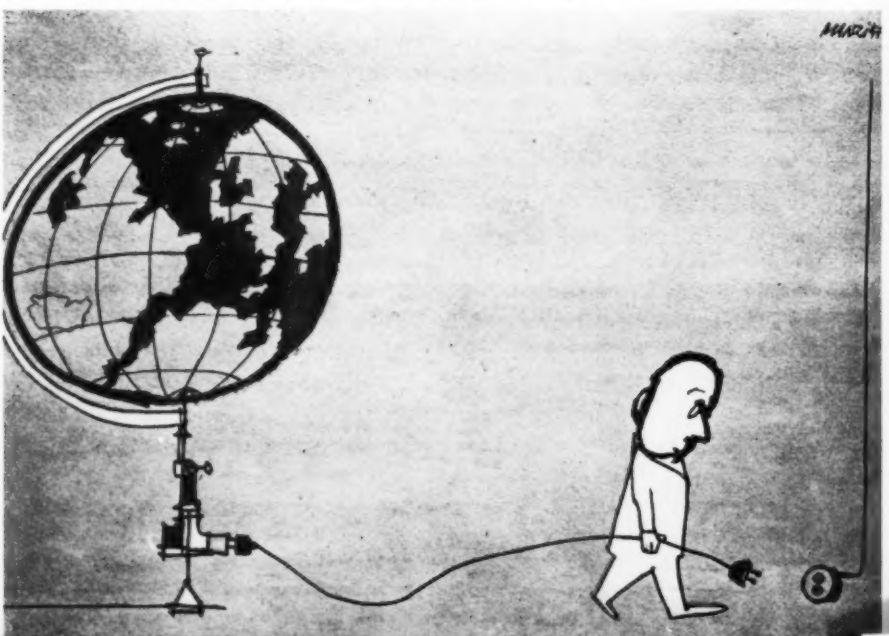
Consider now the factory worker. He also spends several man-hours per day on transportation to and from work. This is a custom which arose when machines had to be concentrated in factories where power could be taken off a shaft turned by steam or water power. With electric motors and with electric power available everywhere, the concentration of mammoth factories in huge industrial complexes no longer seems justified.

Why, asks Daniel Bell of *Fortune* magazine, should large masses of persons be brought to a common place to work? Which is cheaper to transport: workingmen twice a day, or materials twice a week?* As city planners Percival and Paul Goodman point out, "The time of life of a piece of metal is not consumed while it waits for its truck; a piece of metal does not mind being compressed like a sardine."† Why not, then, deliver the work to the worker's home, if only hand or hand tool operations are required, and let him exercise his skills under his own roof? He can receive instructions from his foreman by telephone or perhaps he may have a fac-

*Bell, Daniel, *Work and Its Discontents*, p. 5; Boston, Beacon Press, 1956.

†Goodman, Percival, and Goodman, Paul, *Communitas*, p. 43; Chicago, University of Chicago Press, 1947.

The Vital Spark. *From a symposium on automation in* Pirelli Review, Milan.



XUM

simile machine to receive the latest drawings for the parts he is to assemble.

For work requiring machine tools, or for bulky objects, the materials could be delivered to small neighborhood production centers within walking distance of the workers' homes. Each of these centers would have its telephones, Teletype, facsimile and video connections for receiving instructions, ordering materials, and transmitting production data.

So much for light industry. In heavy industry we already have manufacturing processes, such as continuous rolling of steel, which are controlled from a distance by technicians in control rooms who monitor plant operations by telemetry and closed-circuit TV. In the fully automatic factory of the future, every operation could be under the constant surveillance and control of technicians comfortably seated in their air-conditioned homes. No human being would ever need to set foot in the plant except for maintenance. Here, again, the use of more communication facilities will save time and money and human energy and do away with the monstrous traffic jams that are encountered nowadays around any large factory at starting and quitting time.

Today the Bell System companies generally offer two-way loud-speaking telephone service which enables house-bound children to participate in their school classes. With a video feature added, they could see what is put on the blackboard and watch classroom activities or science experiments. In Hagerstown, the Chesapeake and Potomac Telephone Company of Maryland is coöoperating in furnishing an experimental closed-circuit TV system for the public schools, so that one exceptional teacher can reach all the students in all the schools in the city at one time. With the high cost of school construction and the scarcity of good teachers, one wonders how long it will be before a good bit of education—on high school and college levels, at least—is put on a video basis.

Other trends include the growing use of computers and the transmitting of data to centralized points to be processed, the use of video for centralized x-ray diagnosis, and the like. Providing communication facilities as these anticipated trends materialize should keep Bell System people busy for a good many years to come.

Where to put all the broad-band long distance circuits is a real problem. They won't all go into the 3,700-4,200, 5,925-6,425, or 10,700-11,700 megacycle common carrier bands, or even into the non-government allocations below 30,000 megacycles. The next possibility is the extremely high frequency (EHF) region 30,000-300,000 megacycles. Operating in this region will call for new techniques. For example, we may want to put our communication channels in cross-country waveguides or to use pylons spaced at short intervals and hop from pylon to pylon.

If we look at local distribution, we see more problems; wire and cable carrier cannot even begin to take care of a future demand which includes large video channel requirements. It is not too far-fetched, therefore, to suppose that we shall have to come to the EHF's for local distribution as well as long distance facilities.

Some day the use of extremely high frequencies will be commonplace, enabling us to stay home on Sunday afternoon and visit the Jones family by video (on the reduced night and Sunday video visit rate).

CLEO F. CRAIG RETIRES AS A. T. & T. BOARD CHAIRMAN

CHAIRMAN OF THE BOARD OF DIRECTORS of the American Telephone and Telegraph Company since September 19, 1956, Cleo F. Craig resigned that office on May 31, 1957. He is continuing to serve as a director and a member of the Board's executive committee.

Thus is completed a Bell System career which began with the Long Lines Department in 1913. Twenty years later Mr. Craig was made general manager of Long Lines, and in 1940 he became vice president in charge of that Department. The following year he was elected vice president of A. T. & T.'s Department of Personnel Relations. In 1948 he became vice president of the Department of Operation and Engineering, at the same time heading the organization working on revenue requirements. In 1949 he was made vice president in charge of A. T. & T. finance, retaining also his previous assignment with respect to telephone revenues. Mr. Craig was elected president of the company on July 2, 1951.

In accepting Mr. Craig's resignation, the Board of Directors passed this resolution:

"CLEO F. CRAIG has served the Bell System for forty-four years. He became a Vice President of American Telephone and Telegraph Company seventeen years ago, and in 1951 was elected President. Since September 1956 he has been Chairman of this Board, which he first joined in 1949.

"Under his leadership the Bell System has achieved unprecedented growth and the quality of service has reached new high levels. Tremendous financing has been carried out with outstanding success. The earnings and financial position of the business have been strengthened. Thoughtful and far-reaching programs have been instituted to help assure the best possible leadership in years to come. The foundations for continuing progress are sound and strong.

"THEREFORE, BE IT RESOLVED, that in accepting Mr. Craig's resignation as Chairman of the Board, the Directors record their admiration for his great contribution to our business and service, their personal affection and good wishes, and their pleasure that he will continue to serve as a Director."

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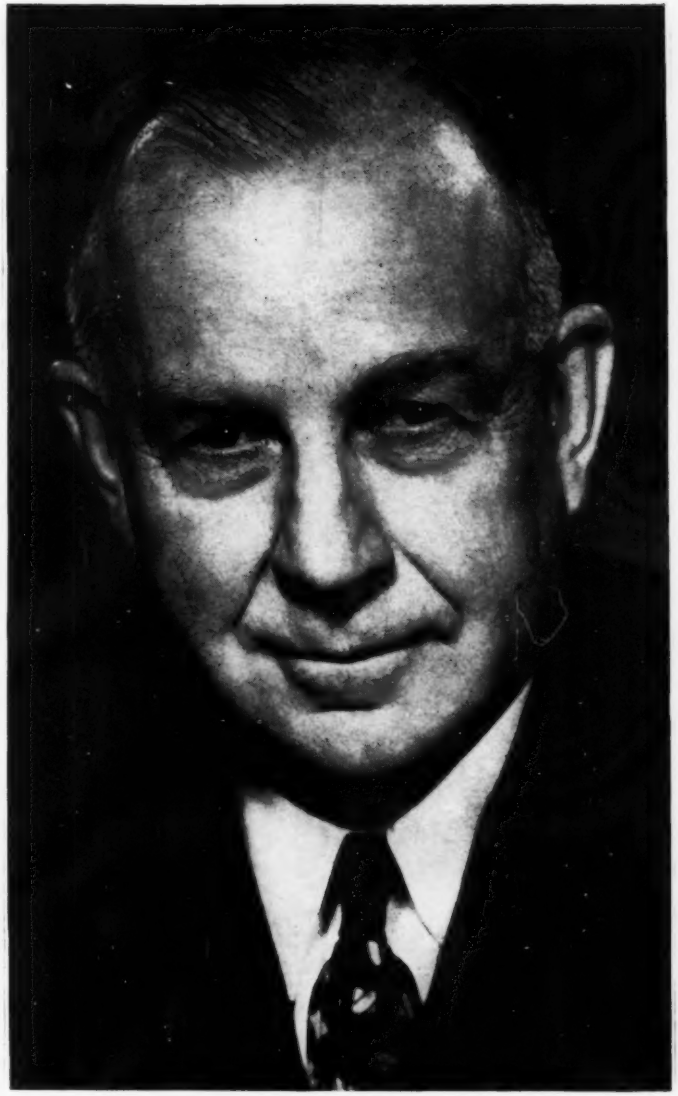

Cleo F. Craig

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A broad program of Industry Studies, already active in 16 fields, will bring great benefits to every kind of commerce and opportunities to this business

CREATING NEW HORIZONS FOR INDUSTRIAL COMMUNICATIONS

FREDERICK C. SMITH

Sales Promotion Engineer, COMMERCIAL DIVISION, DEPARTMENT OF OPERATION AND ENGINEERING, A. T. & T. CO.

LOOKING AHEAD is an old custom in our business. When telephone service was first offered to an apathetic public, it was almost as far ahead of the pattern of its day as interplanetary travel is now. Today, with well over 400 services and instrumentalities in the "line," we have good basis for feeling that we're still "out in front" in meeting customers' needs and wants.

But conditions change constantly, particularly in the industrial and commercial field. The way concerns are organized and function, the way goods are manufactured and shipped and sold, differ radically from the patterns of a few years ago. So we have to keep examining customers' needs and keep looking ahead – not just to 1958 and 1959, but as far ahead as we can.

We're taking a whole new fresh look now at the present and future communications requirements of the major types of industrial and commercial organizations, particularly the complex giants on which our economy depends so much. Shared in by all Bell System Companies and manned by excellent talent, this large-scale Industry Study program was started in full force late last year. Studies of 35 large organizations are now under way in 16 major categories of industry and business. These concerns are representative of some 400,000 customers we serve in these particular lines of endeavor.

The present studies range from industries engaged in raw material production and heavy manufacturing to the leaders

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Note: This article and the one by Mr. Huntley (p. 17) deal with two closely interrelated aspects of the over-all job of fitting Bell System communications service to the ever broadening and ever changing requirements of customers. The program discussed here is a prolific source of ideas for the work discussed by Mr. Huntley and, in turn, provides an important field for testing the value of new instrumentalities and services to industrial and commercial customers. EDITOR

in the "service" industry field, as indicated by the following list:

Aircraft	Mail Order
Automotive	Manufacturing
Banks	Mining and Smelting
Brokerage	Motor Transportation
Department Stores	Pipelines
Hospitals	Power
Hotels	Railroads
Insurance	Refining

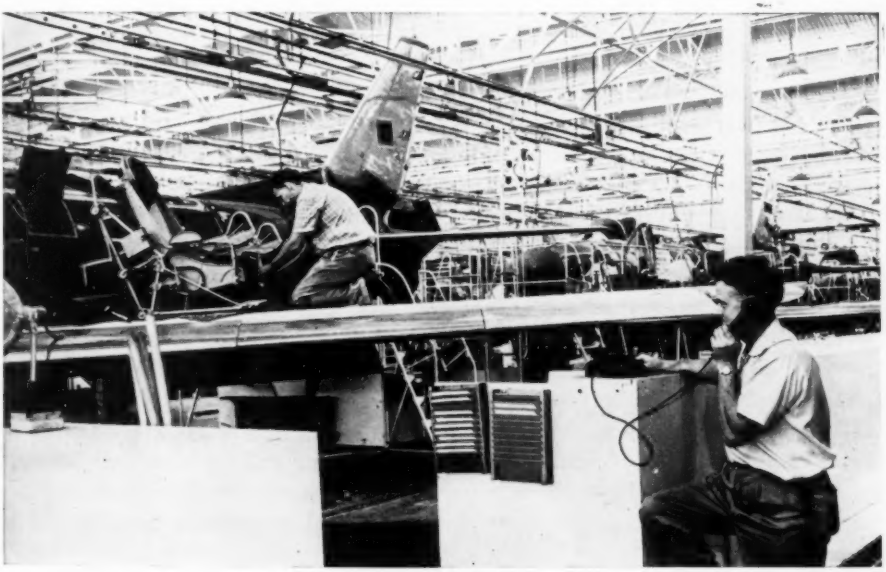
Studies of other industries will come later. It is a large program and one that will take time, as would be expected with anything dealing with a subject as vast and complex as American industry and commerce.

It is still too early to report extensively on the results which can be expected. However, a number of developments are already taking shape, and some of these will be covered later. But before getting to them a word about how the studies are organized and carried on may be helpful.

A New Approach Built on Historic Foundations

BASIC IN THESE Industry Studies is the idea that we are studying an industry's *functions* and *operations*, rather than its present communications. What services and facilities it uses today—and how it uses them—may be significant, but it is definitely a secondary aspect. The basic approach is to determine, in a given industrial or commercial process, what are the communication functions to be performed and under what conditions as to time, place, and relationship with other processes must they be accomplished.

Starting from this idea, the next question is: what does it take in the way of communications services and instrumentalities to meet this particular need completely—forgetting for the moment what we have to offer now. In answering this question, there is, obviously, more than sheer technical conception involved. Always present is the customer's concern



Communications contribute to every step in the manufacture of today's aircraft.

Teletyped orders direct the assembly process as automobiles proceed along the production line.

with operating costs and the constant striving of industry today (including our own) to simplify and mechanize operations wherever possible.

This is one phase of an Industry Study. It deals with things as we find them today. Significantly, the studies are indicating that the present "line" is capable of meeting a great many of industry's current needs very well indeed. At the same time, opportunities for modification and improvement are progressively coming to light.

The next phase of the study—dealing with the industry's *future* operations and needs—is a really tough one and of extreme importance. This is the part that will lay the foundation for keeping well ahead of customer desires and demands as changes occur in large-scale commercial and industrial operations in the years ahead. *And change is one thing we can be sure of for the future.* Most major business organizations have specialists whose sole responsibility is to plan for the future: plan new and better and cheaper ways of organizing and operating their particular business.

Inevitably, communications play a vital part in industry's planning for the future. Our desire to know what their creative engineers and planners are dreaming about is no ordinary self-serving curiosity. It's an attempt to pair their "imagineering" with our own creative talent. They may think that many things are impossible which are entirely feasible of development if a market can be created for them. In this process of sharing their private thoughts and dreamings—and we do this on the most confidential basis – we can help them. And in return we will find ways to better serve our customers generally and create new markets for the products we can develop.

This broad and at the same time in-

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Newly designed turrets in brokerage offices help to handle customers' orders and execute transactions efficiently.

cisive approach makes plain the kind of men we need for Industry Study work. It takes the best talent available – men able not only to analyze communications applications as they find them, but also to probe into the future and visualize new ways in which customers may want (or could want) to operate their businesses, and fitting communications to them.

The basic Industry Study "team" consists of Commercial (Sales and Servicing) and Engineering representatives working on a full-time basis. In some cases there are also full-time members from other departments: Traffic, Long Lines, and Plant, particularly. Merchandising, Statistical, and Accounting people, too, help in important ways.

Coördinating the program, and maintaining a vital pipeline to System engineering and Laboratories resources, are two groups in the A. T. & T. Operation and Engineering Department: one in the Commercial Division and the other in the Customer Products Planning Division. Their job is threefold: to advise the Companies in their study work; to see that experience and ideas are exchanged among the 35 study teams; and to see that Systemwide needs arising out of the studies are translated into effective Engineering or Laboratories programs.

Here we must recognize what sales and servicing people have contributed to this work over the years through countless surveys of their customers' needs. Fundamentally, their approach has been the same basic sort of fact-finding – determining what the customer is trying to accomplish in his operations and tailoring a custom-designed communications system for him from our "supermarket" selection of service and facility offerings.

What Industry Studies are adding is a

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Here is part of a large department store's layout for handling telephone shopping.

This equipment has been specially designed to receive telephoned orders.

new future dimension and a greater-than-ever penetration into broad organizational processes. It is a major addition, but one for which the ground has been well prepared by the day-in day-out work of the sales and servicing forces.

Our Customers Have Customers, Too

ONE ASPECT OF THE Industry Study approach not specifically referred to before is worth particular mention. This has to do with looking at an industry's processes, communications-wise, not only internally but through the eyes of its customers as well. In the end, all the processes of an organization are pointed at its customers. What they think matters, because in all business—not just our business—"the customer is king."

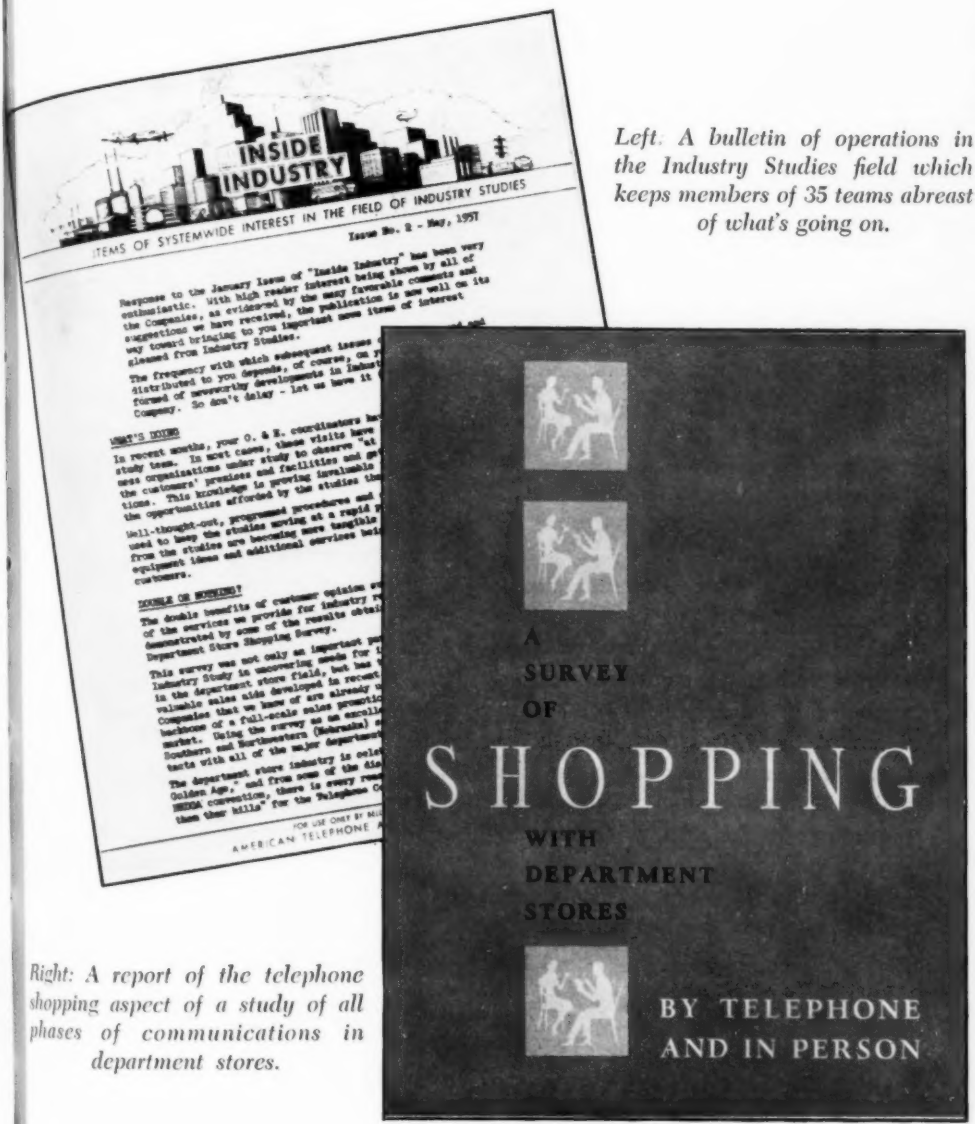
Hence, a basic part of a study is to find out how the industry's patrons feel about the communications channels provided for them—what they like, what they don't like, how they would like to be served, and so on. Such surveys can be of tremendous value. True, some of the findings serve mainly to confirm what is already known or can be surmised. But they also can introduce entirely new concepts.

Take, for example, a survey of department-store shopping recently completed by the Chesapeake and Potomac Telephone Company of Maryland. Hour-long interviews were made with nearly 2,000 women in the Baltimore area to explore their habits and attitudes in connection with both "in-person" shopping and shopping by telephone.

The findings of this survey fill a 32-page summary recently sent to the Companies and available to anyone in the department store industry who wants one. Several items will illustrate how indispensable such surveys are.

For example, it had been widely

thought that telephone shopping tended to cut into in-person shopping. If true, the merchant would understandably be concerned, because he goes to great expense to house and display his merchandise attractively and staff his store with persuasive sales people, on the theory that if people can be enticed to look they can be persuaded to buy. The fact turns out to be that most frequent in-store shoppers are also the most frequent telephone shoppers. Therefore, telephone or-


INSIDE INDUSTRY
ITEMS OF SYSTEMWIDE INTEREST IN THE FIELD OF INDUSTRY STUDIES
A SURVEY OF SHOPPING WITH DEPARTMENT STORES
BY TELEPHONE AND IN PERSON

Left. A bulletin of operations in the Industry Studies field which keeps members of 35 teams abreast of what's going on.

Right: A report of the telephone shopping aspect of a study of all phases of communications in department stores.

Operation of the world's largest open-pit copper mine, in Utah, poses problems of communication.

ders complement, rather than displace, in-store sales. They occur when the customer hasn't time or for one reason or another finds it inconvenient to "go down town" on a shopping trip.

Another example concerns the kinds of merchandise which women would not hesitate to order by telephone. Generally, it had been believed that this was a fairly restricted list—mainly items of a staple nature. Actually, it appears that there is a very wide range of articles, excluding mainly items where style and personal fitting are particularly important or where large expenditure is involved. And women would like to shop by telephone without restriction—they resent ads which say "no phone orders" and they think the merchant should show his telephone number in advertisements to make it easy for them to put their buying impulse to work.

Other surveys of this sort will be coming along as the Industry Study program progresses, and there is no doubt that they will be equally revealing.

Results Are What Count

As INDICATED EARLIER, the studies are still in a stage where concrete results are just now beginning to take shape. Most of them require further refining and exploration. However, a few examples will be indicative of what we can look forward to.

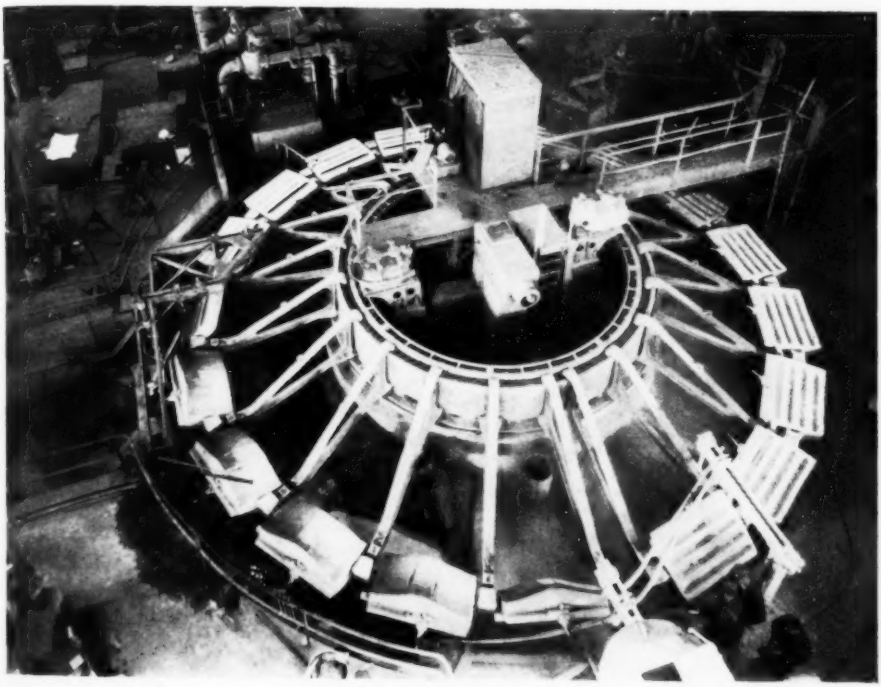
Some of the developments in the hotel field are of particular interest. Hotels are a "service" business. They sell the temporary use of a room and a bed and a few other pieces of furniture. But this is only the beginning. They also sell laundry service and room service and innumerable other services. They are equivalent to a compact, self-contained community.

Giving the guest access to these facilities—and to the world outside—is basically a matter of communication. Historically, this has been handled through the hotel

switchboard and its attendants. They have served well—just as our manual central offices of the past have served communities well. But dial service, we have found, can provide better and more economical service to communities. So, said the Industry Study people, why can't it do the same thing for hotels?

Out of this comes a new concept: dial P.B.X. service for guest use. If the guest wants to reach the valet or the hotel drug store or whatever point in the hotel, he dials a simple code and is instantly connected. If he wants to call a friend or business associate in the community, he dials "9" and then the central office number. To call a Long Distance point he dials "8" and immediately reaches a telephone company operator who can handle his call. No hotel employee is involved in any way, but the guest gets the service he wants, quickly and easily.

This is all very well, you say, but how does the hotel know what telephone service the guest has used and how much to charge him. This has, in fact, been the main problem in mechanizing guest service. However, the solution turns out to be fairly simple (once skilled telephone engineers have figured out how to do it): you put message registers (like the ones in central offices) in the hotel billing department which record the number of messages used by each guest. On long distance calls, the telephone company operator receives calls over special trunks when the guest dials "8," knows what hotel they come from, knows she must



Pouring wire bars at the refinery is another in the chain of processes which begins with digging the ore.

secure the guest's room number and report the charges to the hotel immediately. So whenever the guest checks out, a glance at his message register and a check of the long distance calls tells the hotel clerk what to collect before the guest goes on his way.

The first installations, one in New York and another in Boston, have just been placed in service. You can be sure that as time goes on this sort of service will become commonplace, at least in the larger hotels. Anything that can give the hotels so much more for their dollar of telephone

A new approach to hotel communications. Right: This telephone equipment permits the guest to make his own interior and outside calls. Right above: A light on the telephone indicates that a message has been received in the guest's absence. Above: meters record the number of the guest's local calls, for billing purposes.

expenditure and give the guest more and better service (and, significant from our point of view, probably promote more use of the service by guests) is bound to spread.

Other examples could be cited in the hotel field, but a number of things in other fields deserve brief mention, too. They indicate other kinds of opportunities that are being uncovered.

There are about 1,500,000 beds in the hospitals of the United States. Very few are provided with telephone service for patients' use, although increasingly medical experience is indicating that facilities which help patients keep in touch with normal living during their stay have real therapeutic value. As hospital costs go up, more and more patients are accommodated in multi-bed rooms. Use of conventional telephone facilities under these conditions can be disturbing to neighboring patients. Hence, few are provided today. The need: an instrument which will operate at very low voice level, with silent or very unobtrusive signals to indicate incoming calls. And at a cost which will keep the charge for telephone service to patients at a quite nominal level.

Opportunities Aplenty

TAKING a big jump to another situation, there is a real problem in the long distance trucking industry. Large concerns have extensive fleets of trucks traveling the highways. A typical tractor-trailer "rig" represents an investment of some $25,000 and the cargo may often exceed that value. The driver is a skilled, well-paid craftsman. Profit to the trucking concern comes from keeping the truck filled and moving—knowing where it is at all times so plans can be made for assigning additional cargo at terminal points.

Historically, drivers have pulled into truck stops frequently to check in with the dispatcher, but this involves delay. The need: some means whereby the dispatcher can be advised automatically as each truck of his line passes selected check points located far enough out of terminal cities to allow time to organize cargo for the truck's continuing run. Obviously, the cost of any such arrangement must be in line with the economics of the line's operations.

Again—banks have a major problem today in stopping payment on checks. When a bank was simply a bank—one institution at one location—it was fairly easy to post the tellers to be on the lookout for a particular check. Today, when many metropolitan banks have a dozen—or dozens of—branches, it's not so simple. The need: Immediate notification to all branches simultaneously. A very ingenious scheme has been worked out by one of the Industry Study teams to accomplish this orally. An alternative system, using teletypewriter facilities, has been developed by another team.

Space and the reader's patience necessarily limit such a recital as this. But even these brief references would be incomplete without calling attention to the vast field of data processing and its great significance in almost all of the Industry Studies. If the reader will recall an article on this subject in a preceding issue,* he will have a clear picture of one of the most vital and challenging areas of the whole Industry Study program. In this area, especially, human invention has put wonderful tools at the disposal of industry and commerce. Full use of them depends in great measure on probing study

* "Data Processing Brings New Occasions to Serve," by Virginius N. Vaughan, Jr., Bell Telephone Magazine, Winter 1956-57.

of organizational processes and needs and opportunities. The telephone industry has a great stake in this.

Mention should also be made of an extremely important study recently completed of the operational and reservations communications of the air transport industry. While this study antedated the Industry Study program, it has had the same broad objectives. Carried on by a team of seven Associated Company and Long Lines Commercial people working full-time for over a year, its findings are of very great importance—well worth a separate article on that subject alone.

The End Is Only the Beginning

THE COMPLETION OF THE STUDIES now under way—or even those which will follow—is not the end objective of the activity. What is found out about communications functions and processes in each of the categories under study can benefit all of the hundreds of thousands of concerns in those categories now. Therefore, an immediate objective of the program is to put what is learned broadly about each industry into the literature and knowledge of the entire sales and servicing force.

In this way, each service engineer will have reference material which will tell him all he could need to know about what the industry is, how it typically is organized and functions, how its peculiar communications needs can best be served. It will put him in a position to be not only a generally skilled communications consultant, but literally a specialist, communications-wise, in each of the fields he serves.

Obviously, this approach has no thought of pouring customer communications engineering into a mold. Each customer's needs will still be a custom-tailoring project. But the tailoring will be done with a full background of the anatomical structure of the particular kind of enterprise.

What this program will finally sum up to in the way of service to the public and corollary benefits to our business is beyond any precise conjecture at this point. There is no question, however, that its consequences will be great. It is also certain that only through such looking ahead and planning for the future can we have assurance that we will continue to deserve the position of leadership which our forebears in the business helped to create through their own great vision and their determination always to keep well ahead of customers' conscious needs and desires.

A guest editorial

PRESTIGE: ASSET AND INCENTIVE

BEN SMITH

General Merchandising Manager, SOUTHWESTERN BELL TELEPHONE COMPANY

This is a System-wide publication, and welcomes thoughtful contributions such as this from members of Bell System companies. EDITOR

WE IN THE TELEPHONE BUSINESS enjoy a valuable asset. It is prestige. Prestige acquired by inspiring confidence and the esteem that people have for us. Prestige with our customers, the general public, and within our own telephone family. It may be well that all of us in the telephone business be reminded of our responsibility to keep and even improve that prestige. When the telephone company and its people living in a community have good character, are good citizens, then they may be well thought of, then they acquire prestige. Everything we do and say will affect that prestige—improve it or degrade it.

When you have acquired prestige, then you must continue to act and even look as the public expects you to. Things that other business concerns which have less prestige do, we cannot do. Our buildings must be attractive, in keeping with the community in which we do business. They must be clean, the grounds must be well kept. The appearance of our trucks, the appearance of our people, the manner in which we do business, even our payment of our fair share of government – to run the city, county, state, nation – all have their bearing on the esteem in which we are held. The way the company and its people act and take part in civic affairs all help to contribute to that prestige, and prestige is something that starts small and grows.

We in the telephone business know that because of our prestige, our company representatives find it easier to talk to our customers. Doors open for us more quickly. We are able to show our customers the facilities we have to help them get better and more telephone service. Our representatives in the local community find that because of the prestige of telephone people and the telephone company, company representatives are accepted as part of organizations and associations, and even schools and churches, more readily.

Our prestige affects the credit of our company, as well as that of telephone people. Our prestige can help present share owners and new ones decide to invest in the future of the business.

Our interest in furnishing not only the

best service but also the most complete and useful telephone facilities can influence our customers' opinion of us. Our development of the art is most important, but our prestige is increased when we explore the needs and desires of our customers for new useful facilities for today and tomorrow, and have these facilities ready to meet the customers' needs.

There is another side to this prestige, too. Relations with our customers require more careful handling, because when people are not treated with a helpful, interested manner, as well as courteously, and commitments are not kept by the prestige company, customers are quicker to notice any omission and error because they expect the telephone company to always be interested, helpful, courteous, and meet its commitments. They might overlook these same omissions and errors in some other business which has less prestige—but not in ours.

The prestige of a company is established by the head of that company in the community, and that person sets the tone and the pace. He knows that prestige is important in terms of long-range survival. He knows that a good reputation must not only be protected but continually improved.

Prestige is of great value to all telephone people. The people in the telephone organization are genuinely proud of that company's name, and proud to tell their friends and relatives that they are associated with the telephone company.

Our challenge is to be sure that all of us communicate our reputation, our character, our pride in the company, in all our dealings with the public and customers.

Prestige is part of the climate in which we work, and a good climate is important as a morale builder. The prestige the telephone company and telephone people have is something to guard zealously. Telephone people have the continuing responsibility to maintain the prestige that has grown over the years as a result of many good people, honest dealings, truthfulness, reliability in making commitments and keeping them.

You are the telephone company, and this prestige belongs to you. Guard it. Protect it. Continue to build prestige.

Seven telephone administrations, forming the Trans Canada Telephone System, created a continent-wide service which was placed in operation 25 years ago

TRANS CANADA TELEPHONE SYSTEM'S ANNIVERSARY

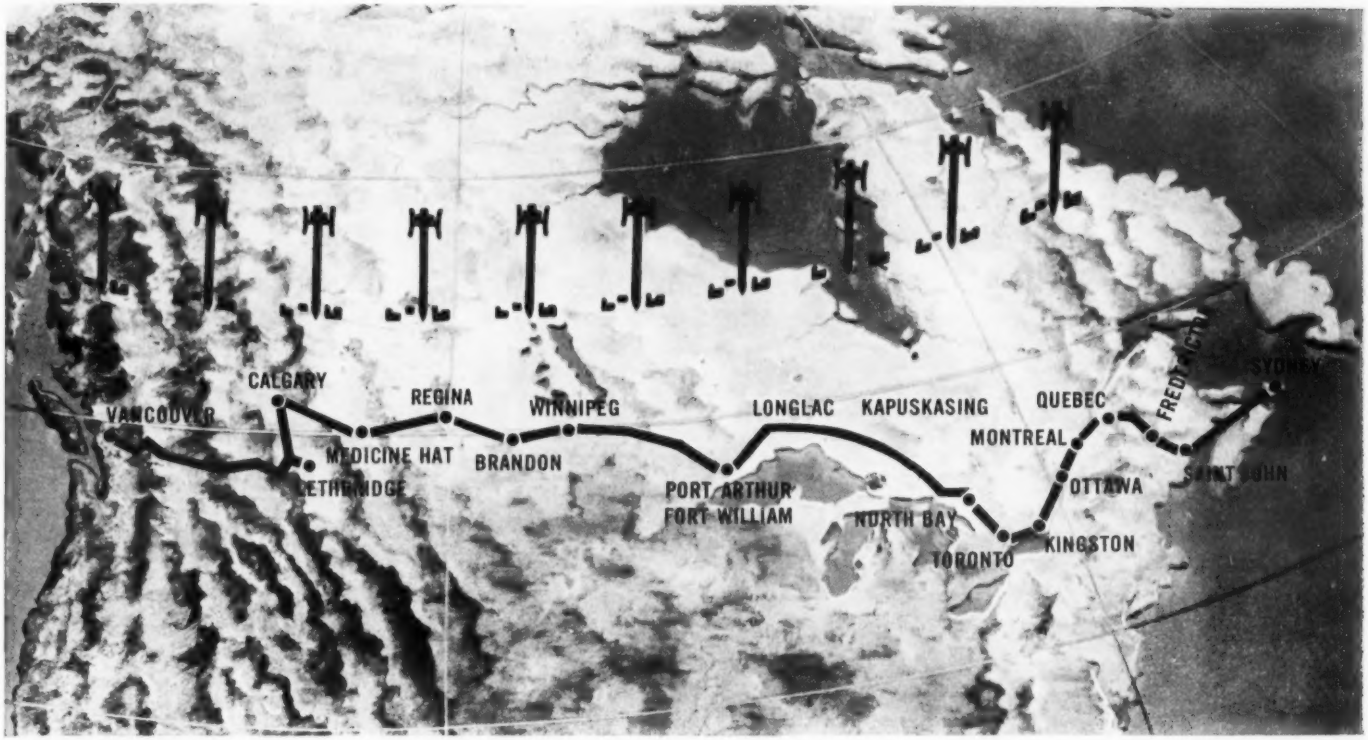
MICHAEL SHELDON

Information Supervisor, PUBLIC RELATIONS DEPARTMENT,
BELL TELEPHONE COMPANY OF CANADA

TRANS CANADA! For the people of Canada there is a wealth of description in the phrase. First the great sense of distance: the spanning of a country 4,000 miles wide. Then the sense of change and contrast: the rocky beauty of the Maritime provinces, the cities and industries of the St. Lawrence valley and Southern Ontario, the mineral and timber-rich wildernesses north of Lake Superior, the far horizons of the Prairies, and the towering peaks of the Rockies descending to the Pacific. And finally comes a sense of the significance of Trans Canada achievements. Whether of rail, road, air, or voice communication, they have proved essential elements of economic advance and even of national unity.

This year the Trans Canada Telephone System celebrates its 25th anniversary. It was on January 25, 1932, as the carillon of the Peace Tower in Ottawa struck twelve noon, that Governor General the Earl of Bessborough declared its services "open to the people of Canada". To mark the event the Governor General exchanged telephone greetings with the King's representatives in the nine provinces. W. L. Walsh, Lieutenant Governor of Alberta, happily expressed the thought behind the occasion when he said, "These new telephone lines are one more tool in the hands of those who strive to weld Canada into one great nation with common ideals and common aims."

Trans Canada did not in fact provide the first nation-wide telephone service, but it set up arrangements for carrying the calls entirely over the lines of Canadian telephone systems. Montreal first spoke with Vancouver in 1916, the year after the transcontinental line was opened between New York and San Francisco. The call travelled by way of Buffalo, Chicago, Omaha, Salt Lake City, and Portland. In 1921 the Telephone Association of Canada was founded as an organ of national co-operation for the telephone industry. The delegates at their first meeting looked forward to the day when, as one of them put it, the railways' nation-wide band of steel would be joined by a band of copper. Engi-



The original Trans Canada telephone line of a quarter of a century ago and today's microwave radio relay system follow the same route from city to city across the continent. The Canadian Government's new Mid Canada Line, for detection and warning, stands guard farther to the North.

neering studies were initiated in 1928 and construction started in 1930. Two thousand miles of pole lines had to be rebuilt and 22 new repeater stations established.

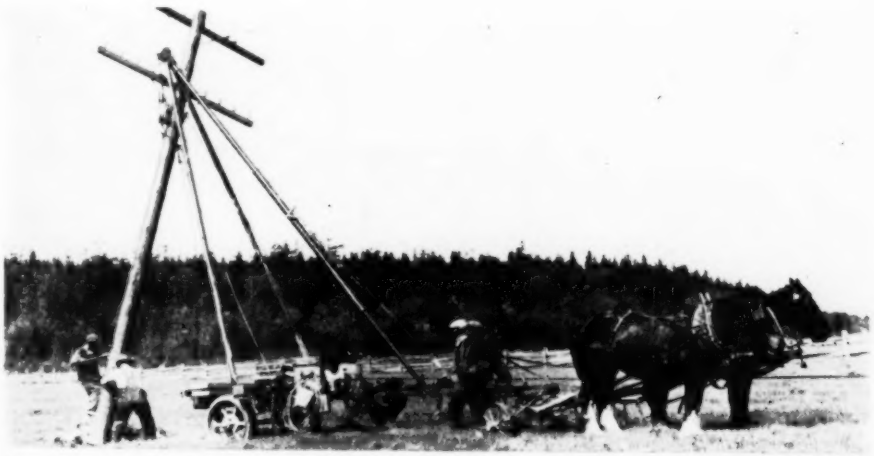
The Trans Canada Telephone System, like its parent association, is composed of both shareholder-owned companies and government-controlled systems, for both have had their part in developing the nation's telephone services. Two private companies serve the Maritime provinces: The Maritime Telegraph and Telephone Company and The New Brunswick Telephone Company. The Bell Telephone Company of Canada serves Ontario and Quebec. Then come three provincial government systems: the Manitoba Telephone System, Saskatchewan Government Telephones, and Alberta Government Telephones. The British Columbia Telephone Company, the seventh full member of Trans Canada, is shareholder-owned.

In 1956 two associate members joined the System. They are The Avalon Telephone Company, which provides service in Newfoundland, and the Canadian Overseas Telecommunication Corporation, a crown corporation established by the federal government. The COTC has coöperated with the A. T. & T. Co. and the British Post Office in constructing and operating the transatlantic telephone cable.

A Common Aim

FUNDAMENTAL to the success of Trans Canada has been the way its members have subordinated their contrasting structures and obligations to a common aim: providing the people of Canada with good long distance communications. They also work closely with the many hundred smaller companies that connect with their lines, and so ensure a high standard of long distance service for all Canadian telephone users.

The Trans Canada System is regulated by a management committee formed of representatives of the seven full members. Mr. T. W. Eadie, President of Bell of Canada, is the present chairman. There are also Engineering, Traffic, Plant and Commercial committees. The management



Horsepower in its basic meaning was essential in building the original Trans Canada telephone line a quarter of a century and more ago.

On Dog Mountain. Workers pause while building an aerial tramway which will transport all equipment needed to construct a radio relay station on this site.

committee meets at least twice a year; the other committees are summoned by their chairman as the need arises. A clearing house, located in Montreal, divides revenues from Trans Canada services among the members.

Actually, only calls which involve the facilities of three or more members are classified as Trans Canada and handled through the clearing house. Calls which cross just one boundary are settled directly between the two organizations concerned. But the Trans Canada companies have long understood that the System is the backbone of Canadian long distance service, and that the nation's telephone needs must be viewed and catered to as a whole.

Each member naturally advertises its own services in its own territory; they all support as well a Trans Canada advertising program. Advertisements, appearing particularly in national magazines, lay emphasis on the great value of long distance service – expressed above all in personal terms. They point out too the ease with which Canadians can call from one end of their vast country to the other.

And Canadians are very telephone-minded people: some 16,000,000 Canadians use over 4,000,000 telephones. So the country comes fourth in world statistics in telephone development–after the United States, Sweden, and Hawaii. Toronto, the city with the highest development, has a

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population exceeding one million, and 44 telephones per 100 people—figures which parallel those of Cleveland. The speed of national progress has been outstanding in Canada during the past ten years, and with it the rising use of the telephone. The number of telephones in service has more than doubled. So, too, has the daily average of long distance calls—in spite of the widespread provision of Extended Area Service to the mushrooming suburbs of the big cities. At the same time, the telephone network has advanced far northward to new iron, uranium, and other mining centres.

The development of Trans Canada facilities, too, has reflected the great and growing public demand for telephone services: specifically, Trans Canada revenues have increased four times in the past ten years and continue to rise steadily. And Trans Canada has taken full advantage of the amazing advances in the telephone art which have been achieved on this continent. The capacity of the original lines was expanded through the use of carrier, but early in the 1950's it became clear that massive and imaginative construction would be required to meet the surging demand for long-haul service encountered throughout the country. Canada had entered her period of most vigorous growth and it was essential that the communications the country needed be made quickly available—including facilities for a nation-wide television network.

Up Morrissey Ridge "portage fashion" go sections of a radio relay path-testing tower.

Beginnings of Radio Relay

THUS BEGAN the planning for the Trans Canada microwave radio relay system—for both telephone and television purposes. The first section was built by Bell of Canada, and today runs from Quebec City through Montreal, Ottawa, Toronto and North Bay to the borders of Manitoba. The Manitoba Telephone System carries it on through Winnipeg to Saskatchewan, and Saskatchewan Government Telephones to Regina. Another section is functioning in the Maritime provinces, and a link with the Bell System network has been built between Toronto and Buffalo. The remaining sections are being completed by stages, and the entire network from Sydney, Nova Scotia, to Victoria, the Vancouver Island capital of British Columbia, will be in service by the summer of 1958. Covering 4,800 miles in all, it will consist of 160 relay points. To handle the growing international traffic, additional microwave links with the United States will be constructed at strategic intervals along the border.

In Winter, telephone linemen make their patrols in the Laurentian Mountains by skimobile.

Planning and engineering of the network has been a coöperative effort, but, according to the principles of their association, each member of the System is responsible for financing, constructing, and maintaining the installations in its own territory.

Canada is no easy country to serve with communications, and this is as true for radio relay as for an open wire pole line. There are great distances between centers of population, the terrain where the relay installations must be established can be hard to reach and tough to build in, and the installations themselves must stand up to a belligerent climate — winds of a hundred miles an hour and temperatures of forty below. The Canadian radio engineers obtained valuable advice from Bell System colleagues who had faced similar problems; in many cases they have themselves developed methods which have proved of wider application.

Early complications were encountered in determining repeater station sites. Between Toronto and Buffalo the microwaves had to be beamed across Lake Ontario or make an awkward and costly detour. But under certain conditions the lake acted like a mirror: reflected radio waves would interfere with the direct waves and cause fading. To overcome this trouble, Bell of Canada engineers and Bell Laboratories advisers devised and installed an automatic channel-selecting system. When one of the two channels across the lake begins to fade, the equipment immediately switches to the other. Later models of this device have come into common use throughout the continent.

The most difficult part of the route to test was the crossing of the Rockies. To avoid trucking heavy equipment up to tentative mountain sites, engineers of the

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British Columbia Telephone Company put the sun to work. At each proposed site an engineer established his position by walkie-talkie, then, using a hand mirror, reflected the sun's rays across to his neighbour. Clearance between the light path and the top of any possible obstacle was then measured geometrically.

The most promising site at Sumas Mountain was so difficult to reach that a helicopter was called on the job. It flew across the area and an engineer inside flashed signals to the next site on the chain — on Dog Mountain. This operation showed that a ridge between the two mountains would make necessary a 600-foot tower, an impossible project for the location, and so another route was chosen.

Building in the Rockies has also presented its problems. Most sites are some distance from the highway, and access roads have been bulldozed up the mountain slopes. But at Dog Mountain any kind of road proved an impossibility, and an aerial tramway had to be built—to lift all the men and equipment needed up 4,400 feet of rock face.

Another set of problems was encountered in the barren, rugged country north of Lake Superior. The contractor who put up the towers had to operate out of a caravan, with mobile bunk house, dining hall, and water wagon drawn on trailers along the Trans Canada Highway. In this land of bush and timber, fire is an ever-present menace, and before any construction could begin a gang of local Indians were employed to clear several acres around each site as a fire-break.

Alarm and control centers were a further requirement. At their command post in Kapuskasing, for example, Bell of Canada technicians are responsible for the operation of twelve isolated and unattended relay points spanning more than 300 miles of territory.

A different problem was presented by the gumbo soil of Southern Saskatchewan. Black and immensely fertile, it varies considerably in volume according to the weather. The soil at each site was carefully analysed before the concrete foundations for the 300-foot towers could be engineered and laid.

The Mid Canada Line

ITS 4,800-MILE RADIO RELAY NETWORK is one of the two major undertakings of the Trans Canada Telephone System. The second has been planning and supervising the construction of the Mid Canada Line, which was completed this summer. The middle one of three detection and warning lines which stand guard over the north of the continent, the Mid Canada Line runs across the 55th parallel from Labrador to British Columbia; above it is the DEW line, below it, Pinetree. Trans Canada has acted as

Raising a microwave antenna into position at Olive, P.Q. The 350-foot tower is the highest in the Trans Canada radio relay network.

management contractor on the Line for the Canadian Department of Defence Production, with the Special Contract Department of Bell of Canada serving as project agent.

The line is based on a system of aircraft detection developed by scientists of McGill University and the Canadian Defence Research Board. It has been described as an electronic picket fence. In addition to detection equipment, the line includes radio relay communications for both telephone and telegraph, air-to-ground radio, and an automatic alarm and control system which will allow intermediate stations to operate on an unattended basis.

At the peak of construction some 5,500 people were at work on the line, recruited from the Canadian telephone, electronics and construction industries, as well as from associated American and British firms. Over 200,000 tons of material were transported to the sub-Arctic. And, while its first purpose is defence, the Canadian government sees the line as a most important step in developing the vast northern expanses of the country.

As in the building of the DEW line, transportation was a dominant problem. Construction materials, trucks and tractors, electronic instruments, food and people had to be delivered to their isolated destinations in good time—and in good shape. The methods used to get them there naturally varied greatly with differences in terrain and the changes of season.

First step in the over-all plan was to establish marshalling areas at the end of the few roads and railroads which run to the north. From these depots, aircraft, vessels, and tractor trains penetrated into the uninhabited or barely settled territory

This supply point for the Canadian Defense Department's Mid Canada Line of radio relay detection and warning is at Knob Lake, P. Q. Trans Canada has acted as management contractor on the Line, which runs across the 55th parallel from Labrador to British Columbia, with DEW Line above it and Pinetree below, forming triple protection over the northern area of this continent.

Bell of Canada trucks go aboard an RCAF transport plane to be flown north to a Mid Canada Line location.

where the permanent installations were to be built.

The task proved easiest in the west, for the proposed sites were in rolling, heavily wooded country and could be reached by the extension of existing roads and trails. Eastward, in Manitoba and Ontario, the line crosses the muskeg of the southwest shores of Hudson Bay. Here barges, tank landing craft, tractors, and float planes were employed in summer; tractor-trains, snowmobiles, and ski planes took over in winter, with helicopters making the final lift to the more inaccessible sites. Hudson Bay proved a valuable waterway, but its western reaches are so shallow that a 2,000-ton steamer has to stand eight to ten miles off shore while its cargo is brought in by lighter.

Further east, the terrain again changes completely. Northern Quebec is a land of high and rocky ridges running north and south, and of thousands of lakes. Materials, moved by ship and train to Knob Lake, centre of the Quebec iron ore industry, were carried by amphibian or ski planes to the lakes which served as transhipment points, then delivered by helicopter to the hilltop sites.

Both the detection and communications equipment needed detailed testing in quite new operating conditions. For example, certain sites had to be shifted from their intended locations because they proved too close to the nesting haunts of the local ducks and geese.

As Canada Grows

TRANS CANADA has been appointed by the government to maintain the larger part of the Mid Canada Line, and many Canadian telephone men will continue to spend long months on this national service in the barren lands below the Arctic Circle. On

Snow obscures the tower marking the site of a Mid Canada Line intermediate station near which the RCAF helicopter is being unloaded.

behalf of the other Trans Canada companies and the Royal Canadian Air Force. Bell of Canada operates in Montreal a special training school, where telephone men are taught the operation and maintenance of the advanced electronic equipment vital to the defence of this continent.

Trans Canada activities today reflect the advance of the Canadian telephone industry into many new fields of endeavour: indeed, they include any form of communications that the resources and know-how of the various companies fit them to provide. Teletypewriter service is furnished on a Trans Canada basis, with connections both to the United States and across the Atlantic over the new submarine cable. Among the customers is the Aluminum Company of Canada, which leases a 6,000-mile network, linking its great production centers at Kitimat in Northern British Columbia with Montreal and Arvida in Quebec headquarters and major cities from coast to coast. Member organizations are presently working on an integrated communications system for the Trans Canada gas pipeline which is being built from Alberta to the cities of the east.

But long-haul telephone service remains the top responsibility of the System. This calls for the closest coöperation between the members of Trans Canada and the United States telephone companies, for Trans Canada is providing an important part of the transmission and switching network needed to develop Direct Distance Dialing on a continental scale. Out of eleven regional centers, two have been located in Canada—in Montreal and Regina. There are 4A crossbar centers now operating in Montreal and Toronto, with tandem crossbar scheduled for other places in eastern and western Canada. The Canadian telephone industry is eager to play its full part in carrying out the great plans which have been—and are being—developed for telephone service in North America.

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A collection of more than 50,000 "pix," acquired in recent years, has increased the value of A. T. & T.'s photo service to both Bell and outside users.

GOOD PICTURES HELP TELL THE TELEPHONE STORY

GEARY E. GRIFFITH

Editor, FEATURES AND PHOTOS, PUBLIC RELATIONS DEPARTMENT, A. T. & T. CO.

IN THE SUMMER OF 1950 the Public Relations Department of A. T. & T. embarked on an unusual project when it undertook to bring to life and restore to usefulness its photographic files—if that was the correct term for its limited collection of miscellaneous telephone pictures. A member of the Department was assigned, an able free lance photographer was employed, and a typical American town was sought. The object was to secure a series of "bread and butter" telephone pictures which would quickly re-establish a photographic file of practical value throughout the Bell System.

People at A. T. & T.'s Department of Operation and Engineering sought a town that could not easily be typed for locale—an All-American town, if you will. The reason was that photos taken there could be just as useful in Illinois as in Missouri or Massachusetts. The town selected was Auburn, New York.

The photographic team visited Auburn and stayed for several weeks. They obtained telephone pictures of almost every description—from plant equipment to the operators' lounge; from employees and their families going to church to customers using telephone equipment. They even came back with a "shot" of the mayor of Auburn using the telephone.

THE AUBURN PICTURE SERIES actually put the A. T. & T. photo service in business. Several hundred photos resulted. Since that time they have appeared in hundreds of different places—in Bell System employee magazines, newspapers, booklets, advertisements, and displays.

The photo service this year expects to complete a new collection like the Auburn series. Much of the telephone equipment in the original work is now dated—though not so much to the eye as automobiles, household appliances, and women's hair-do's. Despite the vintage, pictures from the Auburn series are still cropping up in publications now and then.

The telephone business got a lot of "mileage" out of the series. And, though this pioneering venture into industrial

Lines
.ptm
Customer Relations
OUR FINANCIAL PROBLEM ...
P.P.R. EXPRESSES NEED FOR RATES
THAT ARE REASONABLE AND ADEQUATE
A wonderful way to relax!
Appraisal and Outlook for
Communications
Companies
NEW YORK
Herald
Trib
A European Edition Is Published Daily in Paris
Annual R
inside
there's a bright new
rld of COLOR
at your
gertips
INDIANA BELL TELEP

XUM

photography was an auspicious start, it was only that—a start.

Tens of thousands of pictures have been added to the photo files since 1950. From a modest beginning of relatively few pictures in a corner of the A. T. & T. Public Relations library, the file today is the nucleus of a full-fledged photo service offering about 55,000 pictures. It takes the full time of three people to supervise the taking, processing, and distributing of these pictures.

Last year the photo service handled about 2,000 requests for pictures from various sources, resulting in distribution of 14,000 pictures to editorial and advertising users. It is interesting to note that some 10 per cent of the requests originated *outside* the System—from people representing magazines, newspapers, publishing houses, schools, and business concerns.

Are telephone photos worth while? Demand and usage indicate they definitely are an important adjunct to advertising and public relations activities.

THE AUBURN SERIES is an example of successful editorial photography using black and white pictures. Most of the value of the photo service lies in the editorial picture.

In 1954 added emphasis was placed on merchandising, and color photography came to the fore. Attractive color phones and other new products were "naturals" when pictured in color.

A. T. & T. Public Relations display people, for instance, used a series of large color transparencies in an exhibit at the annual meeting of share owners in 1956. This consisted of 12 picture units – 40" x 50" transparencies—which stood pretty much on their own except for a few short written

Opposite: A. T. & T. photographs appear in newspapers, magazines, company publications, annual reports, brochures, and booklets published from coast to coast.

Telephone pictures find use in the promotion of other products. Here are national advertisements of Kodak and DuPont.

Photography puts on a double barreled Sales Talk
EASTMAN KODAK COMPANY, Rochester 4, N.Y.
When your story must be descriptive
DU PON

messages promoting color telephones and extra telephones.

The show was so favorably received that it was sent on tour. Requests from operating companies resulted in bookings for 14 big-city locations across the country as well as many subsidiary locations. Thousands of visitors saw this particular exhibit in such places as the Democratic National Convention in Chicago, the Metropolitan Home Show in New York, and the Indiana and Illinois State Fairs.

"The same show stimulated many requests and inquiries for color sets through our public offices," said one Associated Company supervisor. "We booked it in various localities." Needless to say, the 1957 annual share owners' meeting exhibit, which includes 25 color transparencies of various sizes, is already scheduled for several places in the System.

Another example of the effectiveness of color pictures for displays was at a motel exhibit held at the Statler Hotel in New York City recently. The telephone unit, which competed with numerous other hotel and motel displays, such as swimming pools and furniture, was designed to promote color phones, dial phones in rooms, and advance reservation service. The display consisted basically of four large color transparencies, and the pictures drew the people. Efficient operations by a Commercial sales force resulted in requests from 50 motel owners—out of 300 who attended the conference—for telephone literature on hotel and motel telephone services.

"We're delighted with the addition of color photos in our display plans," said A. T. & T.'s exhibit supervisor. "They have proven most valuable and we're in the picture business to stay."

Another company during the past year used color pictures in shadow boxes as an experiment in various business offices, central office visitations, trade shows, and fairs. Based on the interest during the trial, the company plans to repeat this year. One example: There was a problem of selling blue phones in a downtown business office. A color picture of a young lady using a blue phone was displayed in a prominent spot in the public office. Within one month, 12 people requested blue phones.

Two display units, from this year's A. T. & T. annual meeting, which present various telephone products through large color transparencies. Later such displays are sent "on tour" to state fairs, home shows, and similar exhibits.

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The A. T. & T. Photo Service also lends pictures and phones to photographic concerns and businesses outside the Bell System. Last fall an advertising agency representative walked into the New York studio of a prominent photographer. There he saw some telephone pictures the photographer had made for A. T. & T. This gave him an idea. He asked to borrow a set of our color phones.

His idea eventually turned into a double-page Dupont advertisement in full color in the March issue of *Fortune*. A prominent section of the advertisement included a picture of our color phones—to illustrate a finished product made with Dupont color pigments. In this instance the picture created good public relations with Dupont, and we received some fine publicity for color phones.

The photo service issues brochures—called Photologues—to Bell System companies from time to time. Included are typical photos obtained for its files, and both color and black and white pictures are shown.

Most pictures in the photo library are black and white, offered to Bell System people free of charge. There is no charge for the original color transparencies which A.T. & T. arranges for, and prints of color transparencies suitable for reproduction or display use are made available to Bell System people at a fraction of the production cost.

Display prints in full color are popular—and useful—in public offices and other prominent locations.

In cities across the nation, thousands of visitors see special industrial displays such as this one at a motel conference in New York. Other transparencies can be substituted when the subject changes, and the displays themselves can be used over and over.

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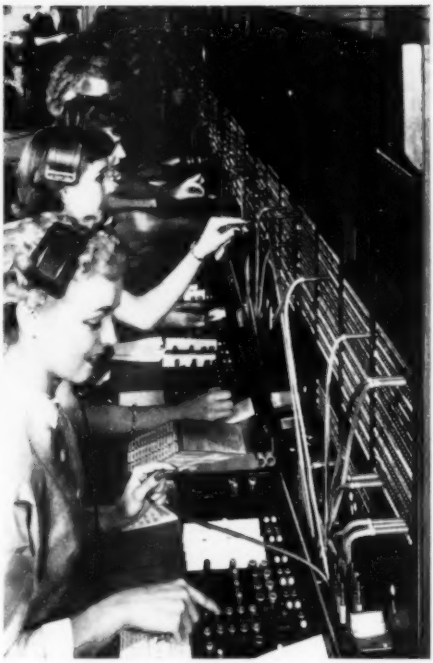

Pictures are a vital influence in our lives —on and off the job. Whether or not we are aware of their effect, they motivate our cultural and basic wants. A youngster wakes up in the morning demanding a pirate ring he has seen in a breakfast cereal advertisement. Dad falls asleep in the evening with a newspaper or magazine complete with pictures of pathos, humor, and faraway places he'd like to visit some day. Mother thumbs through a new direct mail "flyer" containing pictures of glamorous fashion models wearing the latest styles from Paris. Telephone-wise, A. T. & T.'s photo service also influences people.

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The service has three basic functions: First, to study and anticipate photo requirements of the Bell companies, and to furnish pictures on request to augment their own picture files. Second, to serve A. T. & T. departments with photos for publications, displays, and newspaper and other uses. And last – but certainly not least – to promote through photography telephone services and products.

Who's Who & What's What

(Continued from page 3)

large business organizations of the sort involved in the Industry Study program described in this issue. He transferred to the Commercial Division at A. T. & T. in 1942, became business office training engineer in 1945, and later served as new and special services engineer from 1950 to 1956.

BEN (M. B.) SMITH was appointed general merchandising manager for Southwestern Bell at St. Louis on March 15, 1956. He began his telephone career in St. Louis

Ben Smith

in 1924 as a student. He later held various positions in the company's directory organization, and was appointed general directory sales supervisor in 1928. He moved to Dallas in 1936, where he was directory supervisor and directory sales manager. He later was division manager for the company's Southwest Texas Division and general commercial manager for the Texas Area. He had been assistant general manager for Texas since November, 1952, before returning to St. Louis.

Michael Sheldon

EMIGRATING FROM ENGLAND in 1948, MICHAEL SHELDON joined the Public Relations Department of the Bell Telephone Company of Canada in 1951. He has worked on a variety of special writing as-

Geary E. Griffith

signments, including preparation of Bell of Canada's annual report and compilation of a public relations manual for the Company. A recent task has been to develop a course on letter and report writing for the engineering department. To obtain material for an article entitled "Telephone Service Across Canada," which appeared last year in the *Canadian Geographical Journal*, he visited most of the major Canadian telephone companies.

SERVICE IN THE Army in World War II and experience in a New York advertising agency preceded GEARY E. GRIFFITH'S employment in the Public Relations Department of the Southern New England Telephone Company in New Haven in 1945. There assignments as information assistant and staff assistant led in 1954 to the position of editorial supervisor—which included editorship of *The Telephone Bulletin*, the company's employee magazine. Last year he moved to A. T. & T.'s Public Relations Department, where his responsibility as editor of Features and Photos puts him in charge of the photographic services he describes.

HEADQUARTERS SUMMARY

March 15 to June 15, 1957.

IN ORDER TO CAPITALIZE fully on the market for color telephones, particularly in the home, a proposal was recently sent the Companies regarding a number of changes in the present color "line." There has been general concurrence in the changes, and some initial shipments of telephones in the new colors will begin during August. The changes include the addition of *White* and *Rose Pink*, as well as substitution of lighter shades for three of the present colors (*Rose Beige*, *Oxford Gray*, and *Medium Blue*). Not all types of sets will be manufactured in all colors.

Existing Colors To Be Retained	*New Shades of Existing Colors*
Ivory	Light Gray
Moss Green	Light Beige
Cherry Red	Aqua Blue
Pastel Yellow	*New Colors*
Mahogany Brown	Rose Pink
	White

PAN AMERICAN WORLD AIRWAYS has established the first nation-wide automatic reservations network used in the transportation industry. Their sales offices in United States and Canada can now interrogate an electronic unit in New York to determine the availability of passenger space. When completed, the system will serve 97% of Pan American's flights. The system employs sales-agent sets and an availability unit provided by the Teleregister Company, connected by four Long Lines private line teletypewriter channels reaching 30 sales offices.

THE MICHIGAN BELL TELEPHONE COMPANY has decided to reset the 1958 Detroit alphabetical directory to show 2-letter central office name abbreviations with a 3-column page format. This will be the only System directory to appear with a 3-column page. It will also be the largest System directory to appear with 2-letter abbreviations for central office names. Thirty-nine central office names are involved, including some cases where the same dialing letters stand for two different central office names. Explanation of the central office abbreviations will appear on either the inside front cover or in the introductory pages. Reference to this location will be shown in a block appearing in the upper right-hand corner of each 2-page directory "spread."

A RECENT REVIEW of the Nation-wide Dialing Plan resulted in the reclassification of Wayne, Pa., as a regional switching center. (Wayne is located about 13 miles west of Philadelphia.) Wayne will serve eastern Pennsylvania, southern New Jersey, Delaware, Maryland, Virginia, Washington, D. C., and part of West Virginia.

While the 4A switching system at Wayne was placed in service on May 5, 1957, the date on which it will start to function as a regional center has not yet been determined. Before this is done, information on traffic routing and trunking will be furnished to all Companies so as to coördinate the new routings required. This will bring the number of regional centers in the United States to ten. There are two regional centers in Canada.

A NEW Nation-wide Warning System (NAWAS) was established May 1 for dissemination of air raid warnings and warning information from Federal Civil Defense Warning Centers to Civil Defense Warning Point locations in each state. At that time the previous Civil Air Defense Warning (CADW) network and its back-up toll termination facilities were discontinued.

NAWAS is made up of three Area Warning circuits, one of which serves each of the three FCDA geographical Warning Areas into which the nation is divided. These three Warning Area circuits are normally tied together. The System connects the State Warning Points (at least one per state) with the FCDA Warning Center located at Continental Air Defense Command headquarters, Colorado Springs, and with two alternate Warning Centers. The air raid warnings may be disseminated from any one of the three Warning Centers.

PLANS have now been crystallized for operator distance dialing to and from Hawaii when the

undersea cable is opened for operation in the latter part of 1957.

Honolulu will be classified as a Primary Center in the Nation-wide Dialing Plan, with a "final" group to Oakland, its Sectional Center and a "high usage" group to Sacramento, its Regional Center. Standard long distance operating practices will be used by all mainland operators to reach telephones in Hawaii. Similarly, the Honolulu operators will dial numbers directly to the mainland telephones.

A "HIGH-SPEED" private line teletypewriter service is currently being readied for the Strategic Air Command (SAC). Initial installation, now under way, will connect locations in California, Texas, Massachusetts and Nebraska. This is the first commercial "high-speed" service made available for customer use. It is a paper-tape to paper-tape system using the standard teletypewriter 5-unit code. Speed of transmission will be at the rate of 600 words per minute. This is six times the present-day fastest teletypewriter service. It equates to 3600 characters per minute or approximately 450 "bits" per second.

ON JULY 16, A. T. & T. will proceed with the call for redemption on October 14, 1957, of all of its 3¾% Convertibles of 1967 then outstanding. After the call, there will be no A. T. & T. convertibles outstanding—the first time this has happened since the Convertible 3s of 1956 were issued in 1941. The 1967s will be called at 106.65% of the principal amount. Accrued interest will be paid to October 14, 1957, the redemption date, but after that date interest will cease to accrue. Since the current market price of the debentures is substantially in excess of the call price, the Company will again make every effort to see that holders of the issue are aware of the call so that they can sell or convert before the redemption date. At the time the call was announced, about $24,000,000 of the 1967s remained outstanding. Based on past experience, most of these should be exchanged into stock by the time the conversion privilege expires at the close of business on October 14. In the case of the 3¾% Convertibles of 1965 called last year, for example, only $548,600 remained unconverted and subject to redemption.

PLANS are virtually complete for putting A.T.&T. stockholder records on magnetic tape, so that changes in holdings, the payment of dividends, the issue of blank proxies, and the preparation of subscription warrants can all be handled on electronic data-processing equipment. Basically the procedure involves the use of about 300 reels of tape for recording the necessary information pertinent to the 1,500,000 individual share-owner accounts, thus eliminating the need for the present ledger cards and addressing plates. The "electronic brain" around which the procedure is being built will be a large-scale computer. Delivery of this machine is not expected for a year or so, with the full cut-over scheduled to take at least another year. At some time before the major cut-over, a pilot group involving one control desk of about 17,000 accounts will be put on magnetic tape and processed in parallel with the present procedures on these accounts. The machine operations involved in this pilot group of accounts will be handled on a service-bureau basis; and while the pilot operation is in progress, the programs now being developed for full operation of the job will be completed.

THREE educational ventures have recently been established by Bell Laboratories. One, a graduate study program set up in coöperation with New York University, will permit graduate engineers and scientists at the Laboratories to take courses leading to the Master of Electrical Engineering degree and to accumulate graduate credits toward the doctorate or other graduate degrees. The first group to enter fully into this program will begin its studies this fall. A second plan is designed to assist employees who are pursuing undergraduate studies on their own time. Employees doing acceptable work at accredited institutions may have up to $250 of tuition expenses refunded by the Laboratories per school year. The third educational venture is a program for training specialists in digital computer techniques and data processing. The Digital Techniques Laboratory (DTL) will take men with first-year training in the Laboratories Communications Development program or its equivalent, and will conduct the studies on the level of graduate-school research in accredited colleges and universities.

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The Blue Pencil

WHAT IS Robert Geissman telling us on the cover of this issue? That dreams must precede accomplishments? That's it, of course – just as Alexander Bell must have dreamed dreams before he pulled his great concept down to earth and gave it embodiment and made it work. Here we have the present linked with what lies not too far ahead and that in turn with what might be called imaginative but not inconceivable. Indeed, all you see in the painting has not only been conceived but given physical shape and substance – if not

practicality. What is today's fond hope is tomorrow's goal at hand and next week's – or next year's or the next generation's – accepted fact. We telephone people are living in exciting times.

Before we get too far away from Bob Geissman, let's recall that he painted last summer's cover too: The desolate DEW-Line scene. We said then that ". . . during World War II he was art director for the Air Force Combat Film Unit, and . . . received the United States Air Force Exceptional Service Award for his work in establishing an art program which is recording the world-wide activities and operations of the U.S.A.F."

THIS ISSUE'S COVER relates primarily to "Customer Products Planning – What and Why and How," by Harold Huntley. But it is not far afield from Fred Smith's "Creating New Horizons for Industrial Communications," which deals mostly with new methods but comes up with new equipment when it is called for. And while we're dreaming dreams, we might look for a minute at those Gale Smith reports on – although he doesn't name them as such. They, too, will materialize one day.

What does it all add up to? Product planning – new horizons – a look at the future – in this one issue; progress in merchandising, in previous issues and in others yet to come; a great forward surge – renewed vigor – a heartening stimulus to employees. Can we say all this comes out of a working vision which takes in, now and then, something as far ahead – or over head – as dreams?

TWO SMITH'S we've mentioned here. You will have discovered already that we have a third with us. A trio of Smiths in one issue is certainly a record for this publication, and deserving of special mention. So what do we say? "The smith, a mighty man is he" comes to mind instanter; but that is an off-beat quote, for ours isn't the kind of smith Mr. Longfellow was talking about. Other quotations are no more apt. Probably the best comment came from one of the three, who, when told he would appear with two others, said, "Well, that is a good prescription for anonymity." We are not quite sure just what that means, but it sounds keen, and we hail the well-known Trade and Mark and their brother Registered, and invite them to come again.

IS IT ODD that an editor should take pride in the achievements of his "alumni"? This one feels, at any rate, that his MAGAZINE partakes somewhat, even though passively, of the growth in stature of those who contribute to it; that a bit of the lustre rubs off onto these pages when a well-known figure who has

Mrs. William G. Thompson, Mr. Thompson, the CBE insigne, Ambassador Caccia, William G. Thompson Jr.

appeared therein becomes even better known. Which accounts for this picture of William G. Thompson, assistant vice president, Long Lines Department, receiving the insigne of Honorary Commander of the Most Excellent Order of the British Empire (CBE) at the hands of Sir Harold Caccia, British Ambassador to the United States, on behalf of Her Majesty Queen Elizabth II. Specifically mentioned in connection with this high civilian award were Mr. Thompson's services to Great Britain in the field of international telecommunications.

Except for a couple of years with the O. & E. Department of A. T. & T., Mr. Thompson has been with Long Lines since 1914. A good share of that time has been devoted to the introduction and development and promotion and operations of overseas telephone services. As long ago as our issue of January 1937, he contributed "Making Neighbors of Nations: An Anniversary," in which he discussed the events leading up to – and following after – the opening of radio telephone service with England in 1927. A decade later – in our issue for Spring 1947 – we published Mr. Thompson's "America Is Calling," which we described at the time as a "yarn of war-time expedients and post-war recovery as well as an augury of even greater developments acoming." They sure were; and while his signature did not appear in connection with either of our recent articles on trans-oceanic submarine telephone cables, his interest and guidance were much appreciated. We have no insignia, nor even honorary degrees, to bestow; but we hope to welcome this distinguished "alumnus" to these pages once again to round out a trio of articles from an expert and practiced hand.

That's quite a screed to be evoked by a photograph. But don't you think that's a delightful picture of Mrs. Thompson and William G. and Sir Harold and William Jr.?

Boo-boos: Errors, mistakes, slips of the pen – how editors do hate 'em, and yet recognize that there is no sure defense against them. This Magazine has enjoyed better-than-average good fortune over the years, for few indeed have been the errors of fact. There were two in the last issue, however, and the editor cries *mea culpa* and pleads no excuse. In the *Who's Who* note about William E. Haesche, Jr., who wrote "Our New Science TV Series Performs a Public Service," we said that he

had also contributed to the MAGAZINE for Spring 1955 "Telephone Time Starts Its 16th Year." No such thing, of course: it was the Telephone Hour radio program which had been going for 15 years, not the new Telephone Time TV show. And on the page carrying the pictures of the nine individuals who constitute the Scientific Advisory Board of the Science Series program, we misspelled the name of Dr. Clyde Kluckhohn. His name is properly spelled on the page facing the portraits, and we have long since apologized to the distinguished gentleman. We have found a couple of "typos" too – transposed letters and such-like irritants not caught on the proof – but over the years we have become reconciled to their inevitability. Let us hope that the score for the present issue, and those to follow, builds up again to normal – or better.

JSB

We are happy to display the appended example of graphic communications, which was passed along to us by the director of Customer Products Planning as germane to the article "Customer Products Planning – What and Why and How." EDITOR

Burr Shafer, in the *Saturday Review*, with permission.

"It's a new-fangled thing the boss bought – I'm quitting Saturday."

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